FOOD MANUFACTURE
Incorporating Food Industries Weekly
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CLARK'S CARAMEL

IN THE BAKERY

Department Food Technology
University of Massachusetts
Amherst, Massachusetts

The right Caramel, Clark's Bakery Caramel, not only gives colour but has an improving effect in wheatmeal and malt breads and in rich cakes.

A softer eating crumb is produced, together with a moistness which improves the keeping qualities. Confectionery Bakers are also using Clark's Mocha D the "Caramel with a flavour" for buttercreams, cream fillings, fudge icings and fondant. As well as a pleasing and delicate caramel colour, it gives a definite coffee-like flavour.

In addition to the normal liquid Caramel as used in the Bakery, both these grades can be supplied in powder form **for use in wheatmeal flour, cake mixtures and all types of dry-mixed goods.**

G. HAVINDEN LIMITED
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OF CLARK'S CARAMEL PRODUCTS

How much does a 1-inch steam trap cost Chief?

"How much does a 1-inch steam trap cost Chief?"

"*Depends on how many times you buy it, my lad.*"

"What d'you mean, Chief? You only buy one trap once."

"*You're talking about how much you pay to get it in the first place, son. After that you go on paying. Paying for spares, paying for time to put 'em in, paying for lost production.*"

"Lost production, Chief? D'you mean while you're fiddling with the trap?"

"*No, my lad. Take these presses. The hotter they are, the more they produce. The better they're trapped, the hotter they are. The cheapest trap is the one that traps best and wants least fiddling.*"

"Meaning Drayton/Armstrongs, Chief?"

"*You've said it, my lad.*"

[The Drayton book on trapping explains all this and describes the Drayton/Armstrong range. It is well worth writing for.]

* THIS shows what it CAN cost!...

"*Please find attached order for D/A's. Mr. McCarrick would like 2 off No. 200 as soon as possible, by return if you can.*

"*Mr. McCarrick informed me that lately he opened up a number of traps, including D/A's, and got the shock of his life. The two D/A's were OK. He cleaned and replaced. Every other trap was badly defective. In some cases the whole of innards were missing. As he has recently taken over the engineer's post here he has no idea of the age of the traps. Luckily he had some spare D/A's available which he fitted temporarily. He now intends to go over his whole plant and get it into 100% D/A.*"

(The original letter can be inspected)

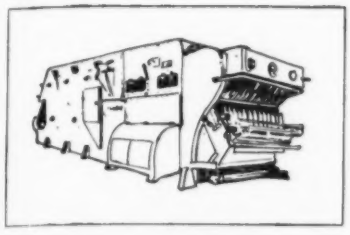
Drayton Traps are better traps

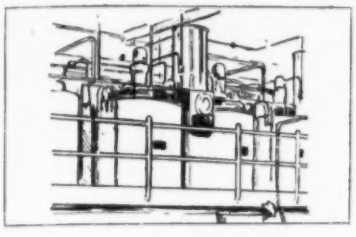
for

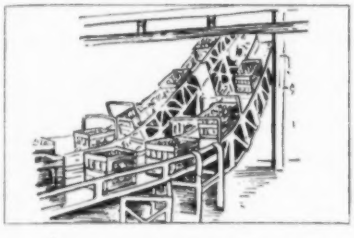
- **HIGHER production**
- **LOWER maintenance**
- **FUEL SAVING**

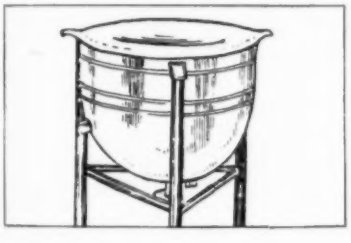
DA 36

DRAYTON REGULATOR & INSTRUMENT CO., LTD., WEST DRAYTON, MIDDLESEX (West Drayton 2611)









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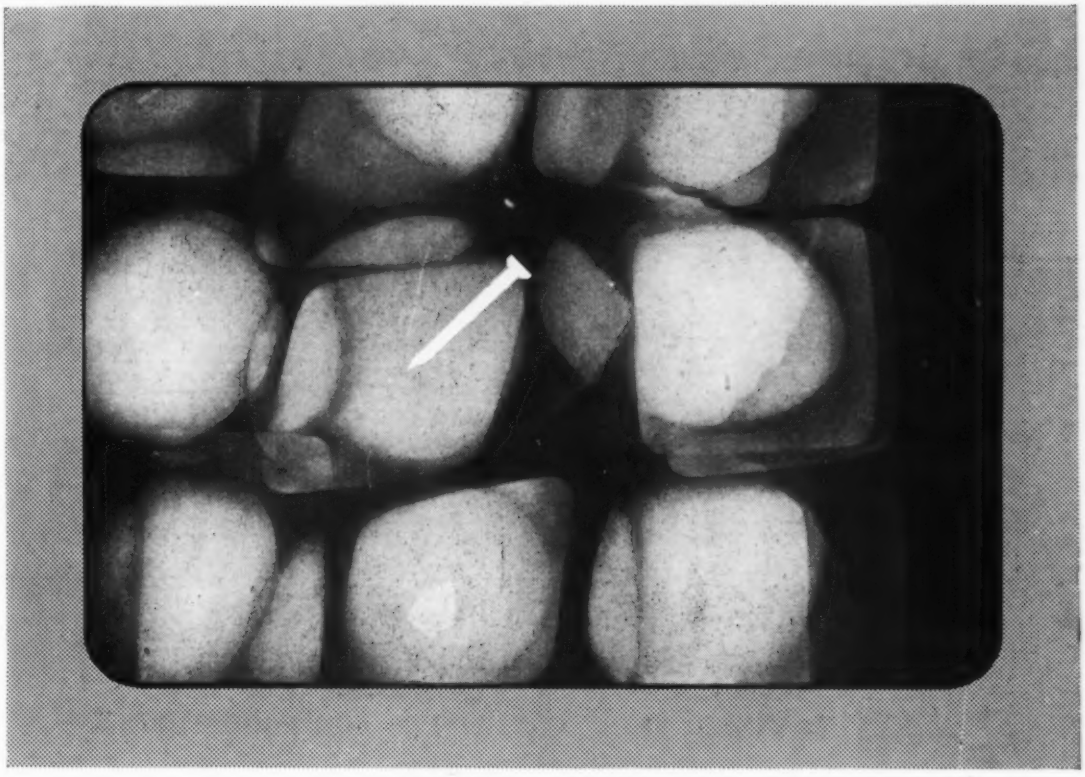

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. . . and the customer never received

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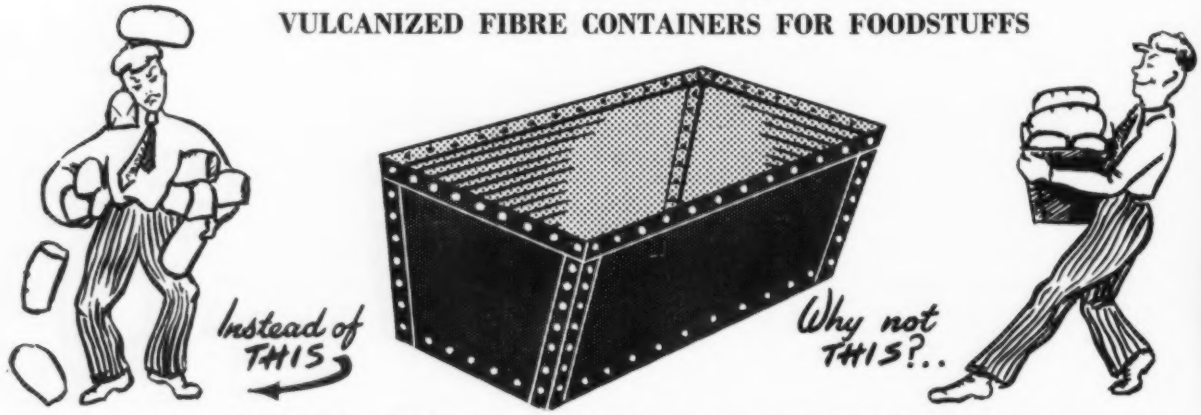

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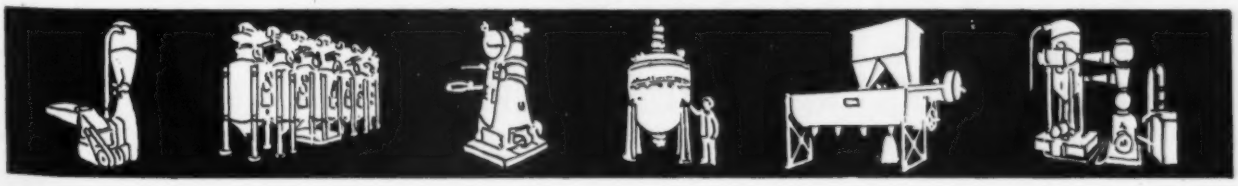

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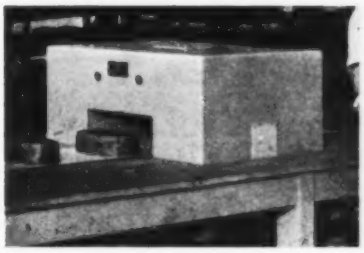
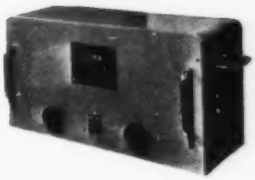
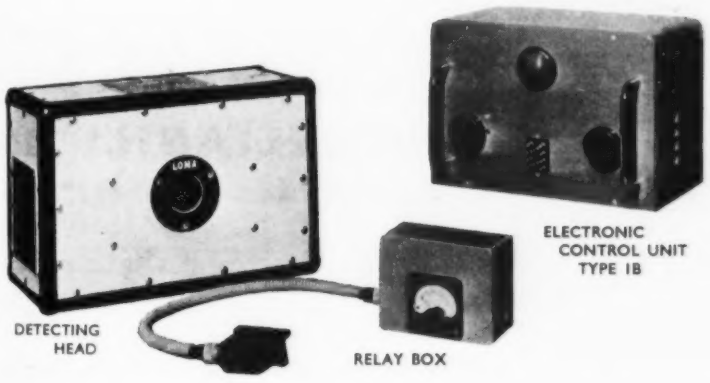


DETECTING HEAD



ELECTRONIC CONTROL UNIT TYPE 1A

RELAY BOX



DETECTING HEAD

RELAY BOX

ELECTRONIC CONTROL UNIT TYPE 1B

LOMA "Metaltectors" are already protecting the following food products:

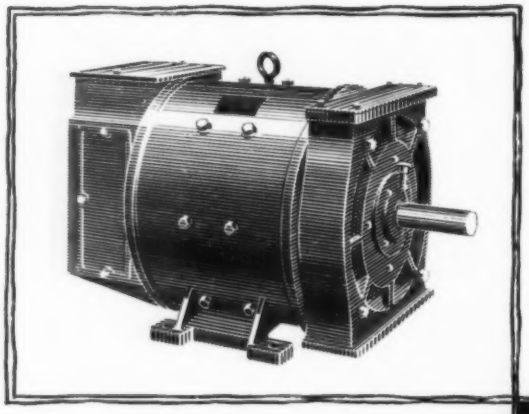
Confectionery	*Milk Crumb*
Prepared Foods	*Biscuits*
Breakfast Cereals	*Jam Preserves*
Chocolate	*Slab Cake*
Bread	*Sugar*
Pickles	*Dried Fruit*
Prepared Stuffing	*Christmas Pudding*
Macaroni	*Yeast*
Chemicals	*Couverture*

WE RESPECTFULLY DRAW YOUR ATTENTION TO THE EDITORIAL ON PAGE 79

LOMA ELECTRONIC EQUIPMENT LTD.

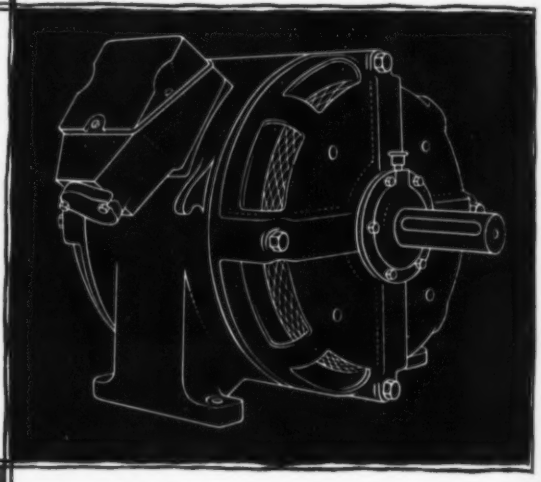
27-29 UNION STREET, SOUTHWARK, LONDON, S.E.1

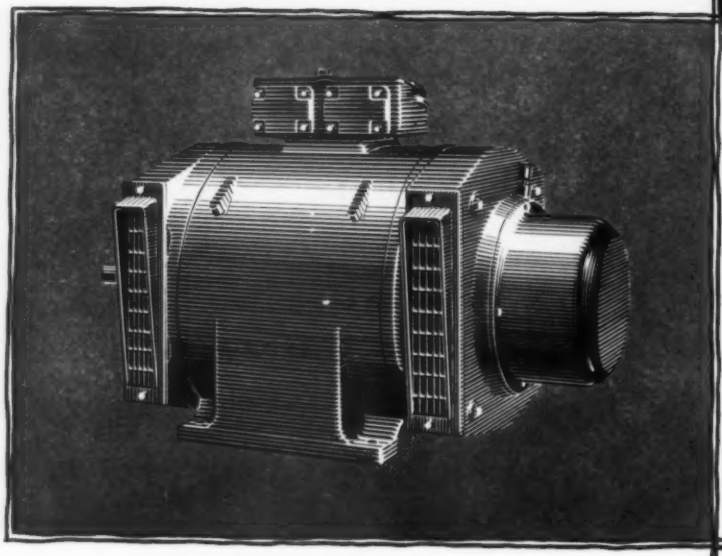
Telephone: HOP 4795 *Telegrams:* METALOMA, SEDIST, LONDON *Cables:* METALOMA, LONDON



They bear

the name **G.E.C.**





...and a name for **RELIABILITY**

G.E.C.

STANDARD INDUSTRIAL MOTORS

GENERAL ELECTRIC CO. LTD., MAGNET HOUSE, KINGSWAY, LONDON, W.C.2

HYSTER (REGISTERED) KARRY KRANE

gives your profits a sure lift

up

backed by the

BOWPLANT

service!

There's all this on the KARRY KRANE

- Safe, self-locking Worm Hoist.
- Adjustable Boom.
- Durable Manganese Sheaves.
- Working Parts easy to service.
- Maximum Visibility
- Trunnion Steering.
- Bumper Guards.
- Hydraulic Brakes
- Six Pneumatic Tyres.
- Comfortable Seat.

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BOWMAKER (PLANT) LTD.

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TELEPHONE: WILLENHALL 696

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TELEPHONE: CARDIFF 45661

FENNY BRIDGES GARAGE
NR. HONITON, DEVON
TELEPHONE: FENITON 206

BOX HILL GARAGE,
BOX, WILTS.
TELEPHONE: BOX 542

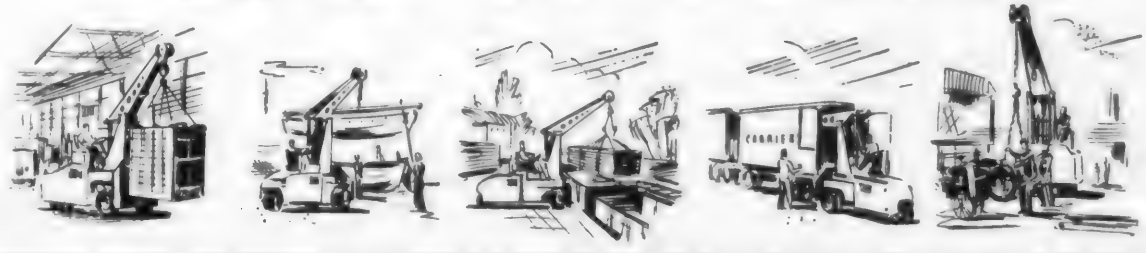
When you consider that handling and transport absorb from 15% to 85% of total factory costs and add nothing to the value of the end product, it becomes immediately clear that improvements in mechanical handling can make a huge difference to your profits. The Hyster Karry Krane constitutes just such an improvement. This powerful and skilfully designed American machine is now available through the Bowplant organisation which offers a fine maintenance service to keep it always on the top line.

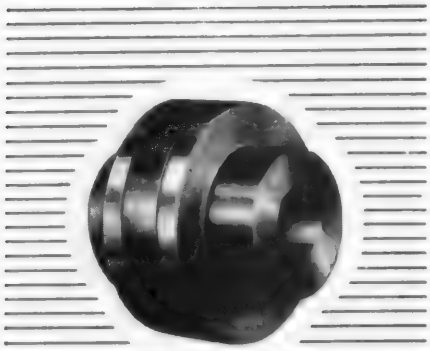
Enquiries invited from Agents and Stockists.

and keeps handling costs

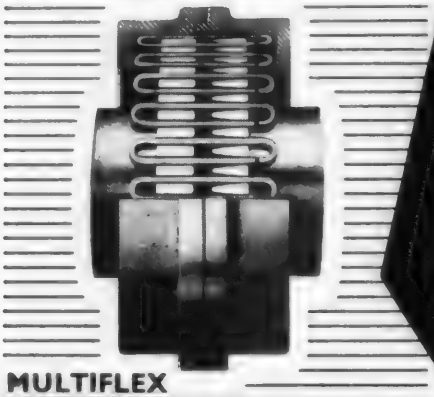
down

TO PRESENT USERS: Why not send in the serial number of your machine and obtain **FREE** Instruction Booklet ?

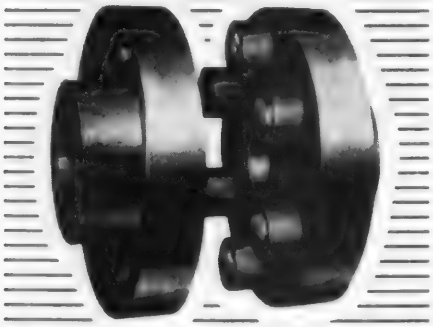




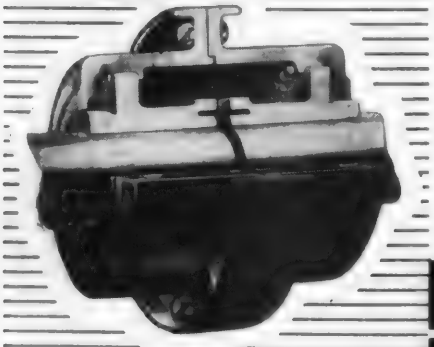
PERFECT



MULTIFLEX



CROWN PIN



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★ AN INDISPENSABLE FEATURE OF MODERN POWER TRANSMISSION••

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FLEXIBLE COUPLINGS

★ Selection of the correct type of Flexible Coupling to protect Driving and Driven Machinery from shocks, sudden overloads, misalignment, etc., is of the greatest importance to ensure Highest Efficiency in Power Transmission.

★ Our catalogue CF.249/14 lists all types of Couplings and gives essential information regarding applications.

Crofts CROFTS (ENGINEERS) LTD., BRADFORD

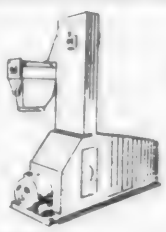
PHONE 65251 (10 LINES) GRAMS CROFTERS BRADFORD

A Service to ensure BETTER RESULTS in Food Processing

THE GARDNER laboratory is equipped to give a special service to manufacturers in the testing of their product to ascertain the best method of securing accurate batches to particular specifications. No matter what the problem, Gardner's experience of over three generations is available to obtain the quickest and most economic machinery to suit your particular product.

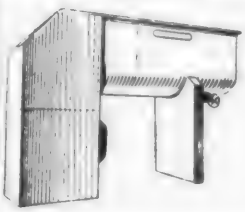
Standard machines, redesigned to incorporate the advantages of modern engineering practice, are available for all food processing, and special machines can be designed when necessary.

Please send your materials for a test or write for details of latest standard machines.



FEEDER
ELEVATOR
SIFTER

VERTICAL
MIXERS



MIXERS

GARDNERS

of Gloucester

This new Laboratory type Mixer, which is supplied with self-contained motor and gear for coupling to the mixer shaft, handles approximately 14 lbs. of material at a charge (at 40-45 lbs. per cu. ft.). Agitator lifts out in one piece, without disturbing guards or gear drives. Easily transportable, with built-in starter—simply plug in. Designed for use on bench, with space for container beneath outlet to receive mix. Motor operates on single phase supply.

Wm. GARDNER & SONS (Gloucester) LTD.

(A subsidiary of the Gloucester Railway Carriage & Wagon Co. Ltd.)

BRISTOL ROAD, GLOUCESTER

Tel.: Gloucester 21261 (3 lines). Cables & Grams: GARDNER, GLOUCESTER

London Office:

1 ALBEMARLE STREET,
LONDON, W.1

Tel.: GRO 8206

NEW

THE COMMER

1¼ ton F.C. ALL-STEEL Van

Salient Features

Phenomenal life chrome bore engine.

Four-speed synchromesh gearbox.

Telescopic hydraulic dampers, front and rear.

Flush fitting sliding doors.

All-steel construction; over 300 cu. ft. capacity.

Here is a brand new all-steel van with success written all over it—your success! With its smart appearance and businesslike finish it will carry your prestige proudly through the streets, whilst its sound practical design will give remarkably long life and low operating cost.

Send for a brochure TO-DAY

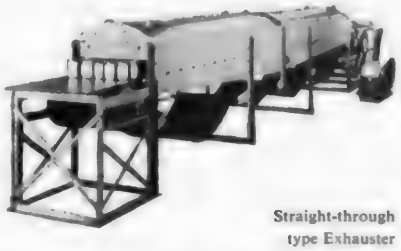
Smart and functional! COMMER

A PRODUCT OF THE ROOTES GROUP

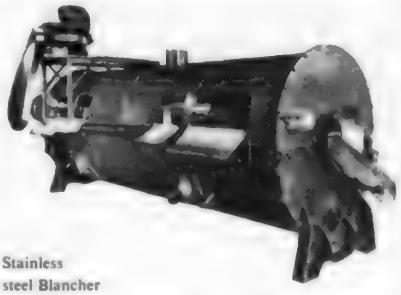
COMMER CARS LIMITED LUTON. EXPORT DIVISION: ROOTES LTD. DEVONSHIRE HOUSE PICCADILLY LONDON W1

Bring your machinery problems to the specialists

We produce machinery which operates continuously. We are specialists in increasing production. Our equipment includes Can Handling Friction and Bar Elevators and Cable Conveyors. Consult G.C. Engineering for your particular requirements.

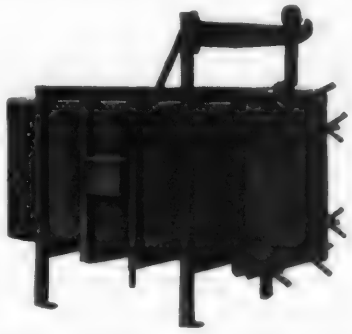


Straight-through type Exhauster

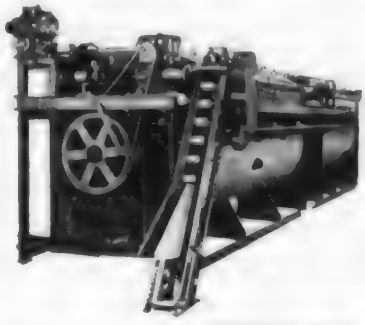


Stainless steel Blancher

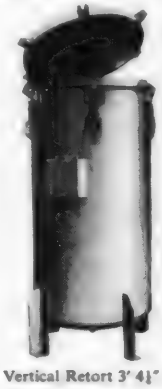
Exhauster fitted with diamond shaped chain



Horizontal Retort 6' 0" x 3' 0" x 3' 0" with door closed



Variable inlet Reel Cooker and Cooler fitted with renewable spiral



Vertical Retort 3' 4½" dia. 3 crate capacity

G.C. ENGINEERING COMPANY LIMITED

(Associated with Frederick Braby & Co. Ltd.)

GRINSTEAD ROAD, DEPTFORD, LONDON, S.E.8 Telephone: TIDeway 1234

The polished answer to processing questions:

Stainless Steel does a vital job for all sections of the Food Industry

Hygienic, non-corroding, easy to clean, Butterfield stainless steel equipment is produced to your specification, with meticulous finish, by expert craftsmen.

For processing, refining, and storage of foodstuffs Butterfields produce a wide range of items, including boiling and evaporating pans, jacketed pans, tipping pans, mixers, hoppers, pressure vessels, receivers, troughs, vegetable trolleys. The finish can be to a high gloss, a satin-like sheen or a matt finish, according to your own requirements.

For the transport of liquids such as milk, glucose, fruit juices, edible oils, there are Butterfield Road Tanks in stainless steel, lined mild steel, or aluminium. Insulated as required.

BUTTERFIELD

stainless steel equipment

W. P. BUTTERFIELD LTD., SHIPLEY, YORKS. Tel.: Shipley 52244 (7 lines)

LONDON: Africa House, Kingsway, W.C.2. Tel.: HOLborn 1449

BRANCHES: Belfast, Birmingham, Bristol, Dublin, Glasgow, Liverpool, Manchester, Newcastle-on-Tyne, Nottingham.

Why FLEXIBLE MOISTURE PROOF TRANSPARENT **Dio** *thene* (POLYETHYLENE) *is ideal for* PACKAGING *FOOD*

FRUIT

PROTECTIVELY TOUGH

DIOthene *stretches*, so is not easily burst nor punctured. It is unaffected by acids and alkalis; liquid proof; powder proof; moisture vapour proof. Virtually non-inflammable and frost resisting, it is excellent for tropical or deep freeze storage. DIOthene is ideal for packing in units or in bulk.

CUT COSTS

DIOthene is feather-light, so freight charges are low, and empty DIOthene bags take up almost no warehouse space compared with empty rigid containers. DIOthene is a "one-way package"; breakages, collections, invoicing of empties, and return freight charges are eliminated

POULTRY

ICING SUGAR

CLINICALLY CLEAN

DIOthene is extruded in tubular form at a very high temperature. It is *sterile*, and the all-important inner surface *remains* sterile. No plasticiser is used; the purest products can be wrapped indefinitely with no fear of contamination from within or without.

AND SELL

DIOthene, with its silvery sheen has immediate eye and appetite appeal. The customer can *see* your product in DIOthene and its silkiness adds that touch of luxury that prompts impulse purchase. It also ensures flavour protection. *Excellent re-use value for the housewife.*

NUTS & RAISINS

in **Dio** *thene* (POLYETHYLENE)

We can offer you DIOthene bags and DIOthene drum liners to required sizes and thicknesses, plain or gussetted, for quick delivery. **Our special printing on DIOthene in monochrome or multi-colour — including gold — gives excellent ink adhesion.** We can add the properties of DIOthene to paper, board, foils or fabrics by coating or lamination — infinite possibilities! We make, convert, design and print DIOthene wrappings all under one roof. Send us your enquiries: ask for more details. Write or 'phone today.

TPL

FLEXIBLE PACKAGING LIMITED

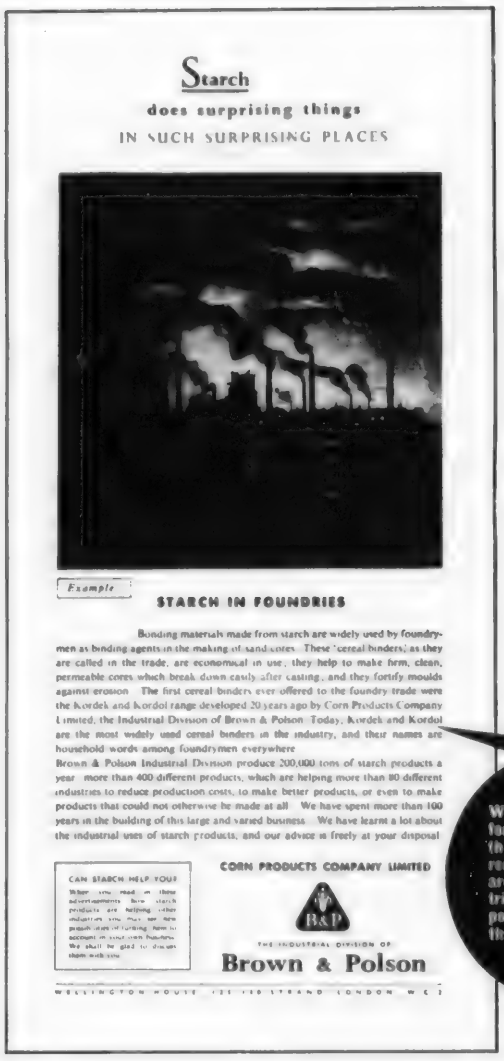
A SUBSIDIARY COMPANY OF TRANSPARENT PAPER LIMITED, MAKERS OF DIOPHANE, THE ORIGINAL BRITISH CELLULOSE FILM TH.5

(Dept. 4), 6 ARLINGTON STREET, ST. JAMES'S, LONDON, S.W.1 *Phone: GROsvenor 5711/4 Grams: Transpaper, Piccy, London* AGENTS THROUGHOUT THE WORLD

For 80 industries

More than
400
Brown & Polson
Starch
Products

The deep knowledge and wide practical experience we have gained by our huge and varied production for other industries is your guarantee that our starch products for the preserving industry will always be the best that can be made. And we can promise you knowledgeable and disinterested advice whenever you care to discuss with us proposed new uses for starch products in your business.

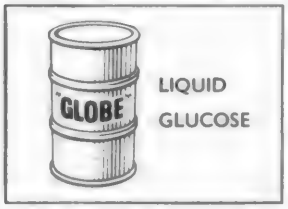

Starch
does surprising things
IN SUCH SURPRISING PLACES
Example
STARCH IN FOUNDRIES
Bonding materials made from starch are widely used by foundrymen as binding agents in the making of sand cores. These "cereal binders," as they are called in the trade, are economical in use; they help to make firm, clean, permeable cores which break down easily after casting; and they fortify moulds against erosion. The first cereal binders ever offered to the foundry trade were the Kordek and Kordol range developed 20 years ago by Corn Products Company Limited, the Industrial Division of Brown & Polson. Today, Kordek and Kordol are the most widely used cereal binders in the industry, and their names are household words among foundrymen everywhere.
Brown & Polson Industrial Division produce 200,000 tons of starch products a year—more than 400 different products, which are helping more than 80 different industries to reduce production costs, to make better products, or even to make products that could not otherwise be made at all. We have spent more than 100 years in the building of this large and varied business. We have learnt a lot about the industrial uses of starch products, and our advice is freely at your disposal.
CAN STARCH HELP YOU?
CORN PRODUCTS COMPANY LIMITED
B&P
THE INDUSTRIAL DIVISION OF
Brown & Polson
WELLINGTON HOUSE 125-130 STRAND LONDON W.C.2
Watch the National press for advertisements like this one. When you read how starch products are helping other industries you may see new possibilities of turning them to account in your own business.

for you, in the Preserving Industry

Most jam manufacturers have encountered the problem of making jams that contain enough soluble solids to be satisfactory in quality, yet are not too sweet for their customers' taste and will not crystallise in storage. Most jam manufacturers are also aware that the best answer to this problem is to use less cane or beet sugar (sucrose) in their jams and make up the required soluble solids content with "Globe" liquid glucose.

Glucose provides abundant food energy but is not as sweet as sucrose. When glucose is used in jam making to replace some of the sucrose it reduces excessive sweetness without reducing food value; it brings out the natural flavour of the fruit; it helps the jam to set; and it prevents crystallisation.

"Globe" liquid glucose is made from starch by Corn Products Company Limited—the Industrial Division of Brown & Polson—and we make the starch, too. Our careful control of every manufacturing process from the grain to the finished product is your assurance of the quality and purity you require in your preserves.



CORN PRODUCTS COMPANY LIMITED

THE INDUSTRIAL DIVISION OF B&P Brown & Polson

WELLINGTON HOUSE, 125-130 STRAND, LONDON, W.C.2

COLLAR CANS

The new can with the hermetic closure and perfect "re-seal"

1. Hermetic Seal
2. Easy opening
3. Opening key supplied
4. Smooth "turned-over" edge
5. Hinged lid for perfect reseal
6. Colour printing direct on to metal

Metal Box *'know-how'* does count!

THE removal of packaging restrictions allows this entirely new type of can to be supplied freely for the first time—and Metal Box capacity for quantity manufacture means that it is available at an economic price. The Collar Can has advantages for both manufacturer and consumer. It gives hermetic sealing. It is opened easily with the key provided. When opened the equivalent of a neat hinged-lid gives an efficient and convenient reseal. High quality surface decoration, printed direct on to the metal, can add sales and advertising value.

The Collar Can is precision made and designed for high speed filling and closing operations. It is ideally suited for most types of powders, solids and granulated products that need a hermetic seal to preserve freshness and flavour. An ingenious can proving that in container design and production Metal Box "Know-How" does count!

NO OTHER CONTAINER PROTECTS LIKE THE CAN

THE METAL BOX COMPANY LTD · THE LANGHAM · PORTLAND PLACE · LONDON W.1

Today's goods must
SELL ON SIGHT

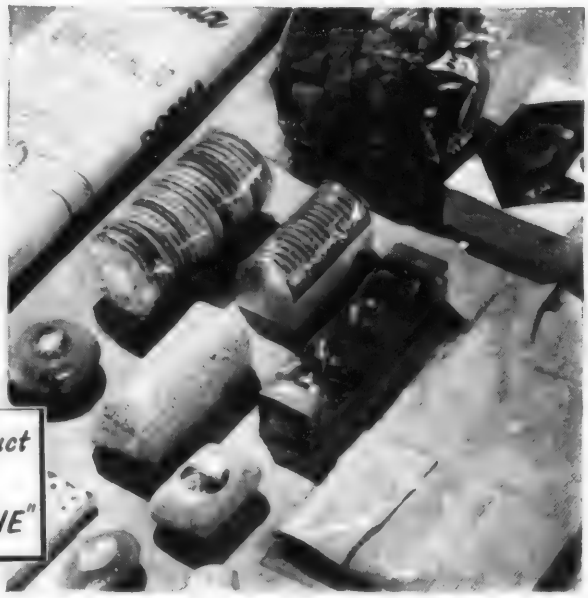
Self-service is a factor of rapidly increasing significance and alert retailers everywhere testify that goods packaged deliberately for self-service sell best. Today an effective package must do more than protect its contents—it must also display them distinctively, attract the eye, hold attention and persuade. Moreover, although an attractive container may suggest purchase, the consumer buys the *product*—not the package, so she wants to *see* what she's buying.

That is why "Cellophane" is being used everywhere in ever-increasing quantities. "Cellophane" is not only Strong, Flexible, Hygienic and Easily Printed. *it is superlatively transparent*—and sold in various thicknesses and types to suit a wide range of products and conditions.

ALL colourless, moistureproof types of "CELLOPHANE" are now *WATERPROOF* . . . they are *less affected by atmospheric variations* and have a *greater seal strength* than other types of cellulose film—which have no anchored coating.
We are the first manufacturers in the world to offer these advantages *at no extra cost to our customers.*
"CELLOPHANE" WITH THE *ANCHORED* MOISTUREPROOF COATING *NOW COSTS LESS.*

Your product
in "CELLOPHANE"

Let our package designers and engineers show you WITHOUT OBLIGATION how "CELLOPHANE" can increase your sales at home and abroad. Ask their aid *NOW*.



Don't hide your product
show it —
in "CELLOPHANE"

SEND FOR SAMPLES AND PRICES

BRITISH CELLOPHANE LIMITED
Sales Offices: 12/13 CONDUIT STREET, LONDON, W.1
Reg. Offices and Factory: BATH ROAD, BRIDGWATER, SOMERSET

"Cellophane" is the registered trade mark of British Cellophane Ltd., and denotes the brand of cellulose film manufactured by them.

P&S FLAVOURS are so much better !

MALLET

COFFEE EXTRA
32/6 PER LB. DELIVERED
Dosage: 8 ozs. per cwt.

COFFEE SPECIAL
20/- PER LB. DELIVERED
Dosage: 6 ozs. per cwt.

Two of our outstanding specialities for the Confectionery Industry

SAMPLE ON REQUEST

POLAK & SCHWARZ (ENGLAND), LIMITED.
50, Great Cambridge Road, Enfield, Middlesex.
Telephone: ENFIELD 4244/5 & 5221/2/3

GOODWILL

needs good packaging

It is one thing to give the product a high standard of packaging. It is another thing to maintain this standard with absolute consistency, year in and year out; and that is what aluminium foil must do today. Otherwise, goodwill is going to suffer, at every stage from manufacturer to retailer. This need for consistency is the reason for the strict Venesta system of quality control and testing, which ensures that Venesta Foil reaches you as perfect as fifty years' experience can make it — not only in purity but in uniformity of gauge, and in printing, coatings, and indeed in every aspect of its preparation. It ensures, in other words, that Venesta Aluminium Foil gives your product the finest and most consistent protection it can have.

VENESTA ALUMINIUM FOIL

A Product of the Packaging Division

T.A.4015

and now
CONTAINERS
NOODLE SOUP
CHICKEN FAT CAPSULES
ROAST WITH GRAVY
GRAVY BROWNING CAPSULES
GATEAU
SPICE OIL CAPSULES
LEMON MERINGUE PIE
TABLE JELLY
FRUIT ESSENCE CAPSULES
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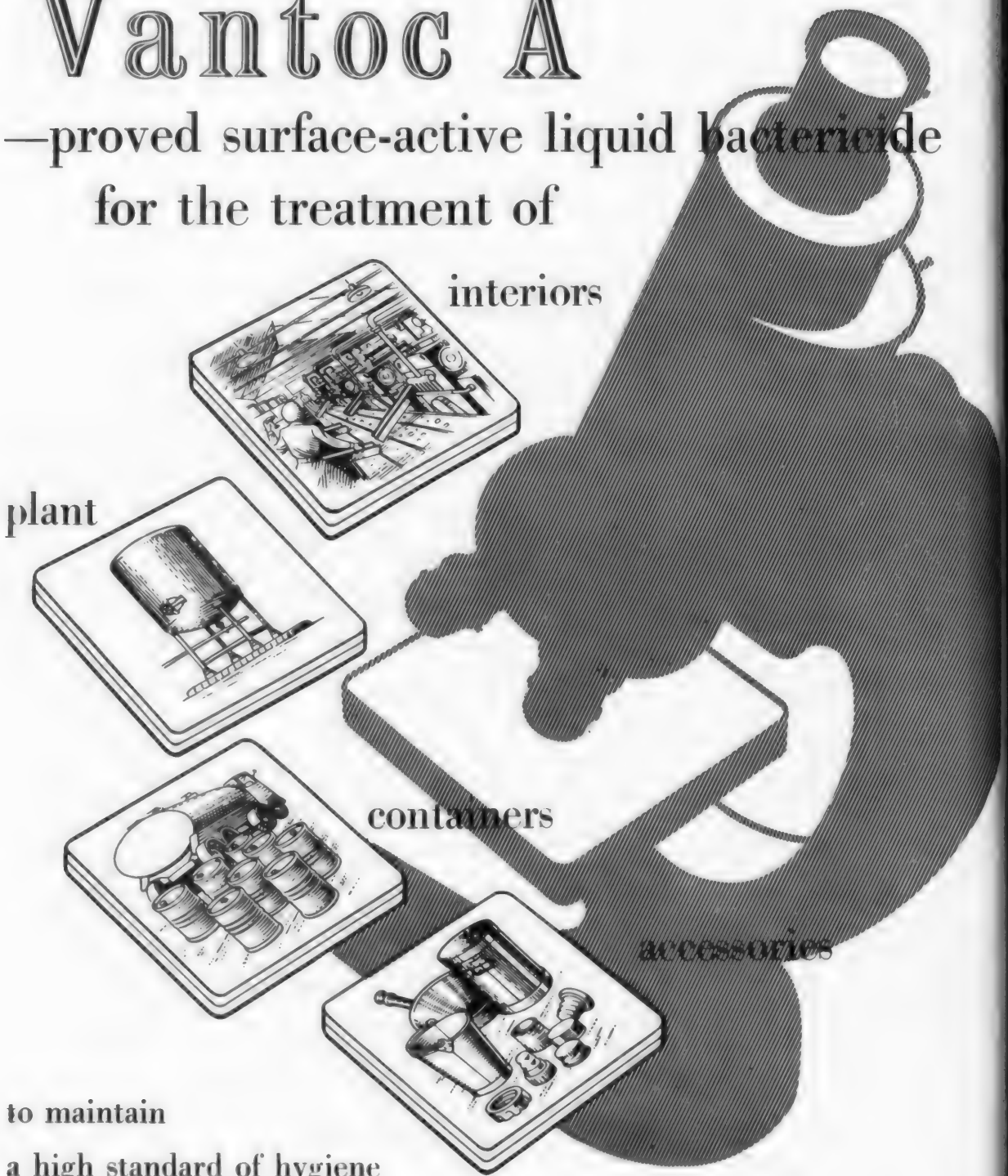
Vantoc A

—proved surface-active liquid bactericide for the treatment of



to maintain
a high standard of hygiene
in the food processing, brewing and soft drinks industries

For further information please apply to:
IMPERIAL CHEMICAL INDUSTRIES LIMITED, LONDON, S.W.1

ICI

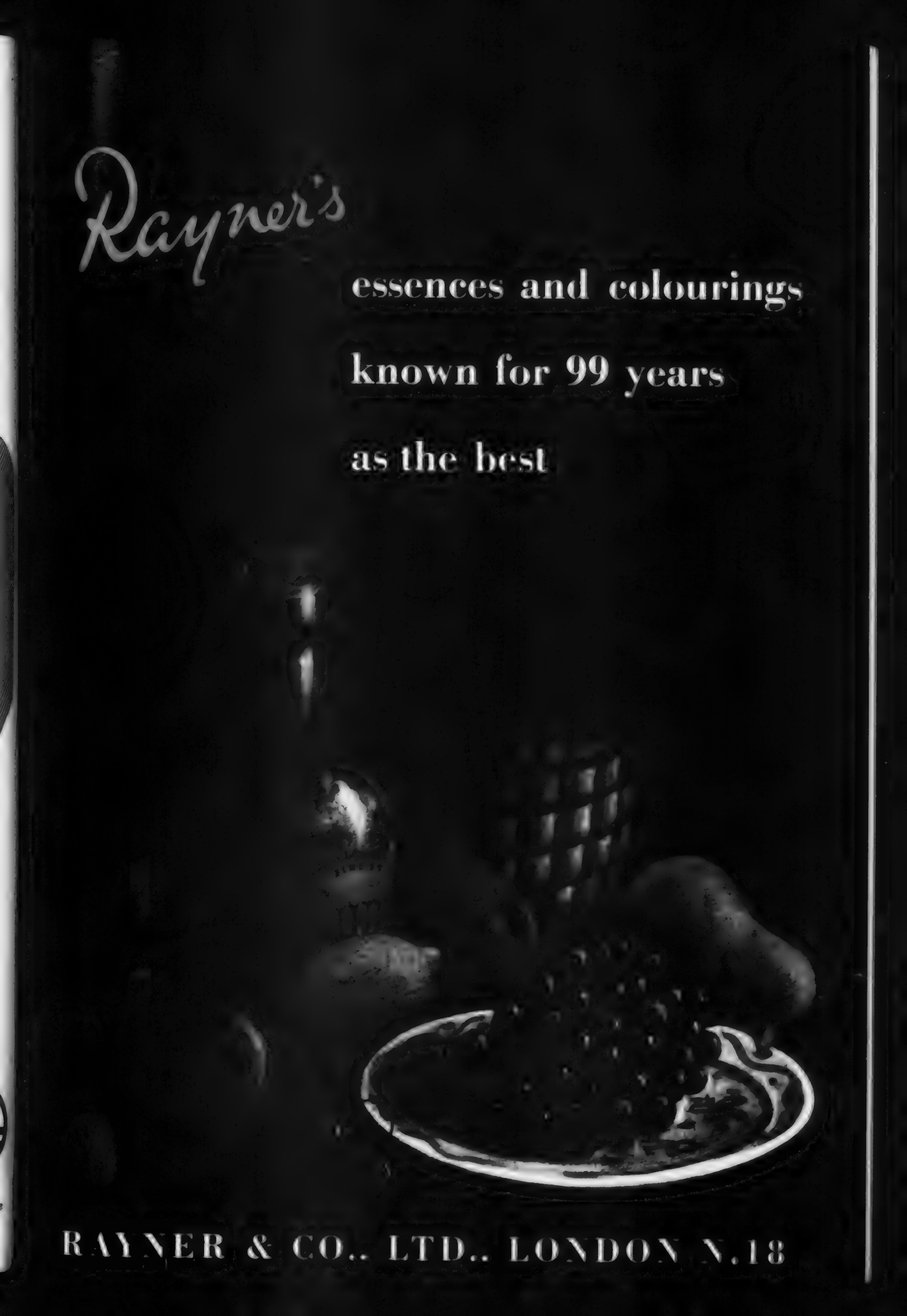
D.328

Rayner's

essences and colourings

known for 99 years

as the best



RAYNER & CO., LTD., LONDON N.18

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SIGMUND
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Exclusive Features include

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No fuss, no special tools, no interference with pipe connections. Loosen four nuts and draw off the stator.

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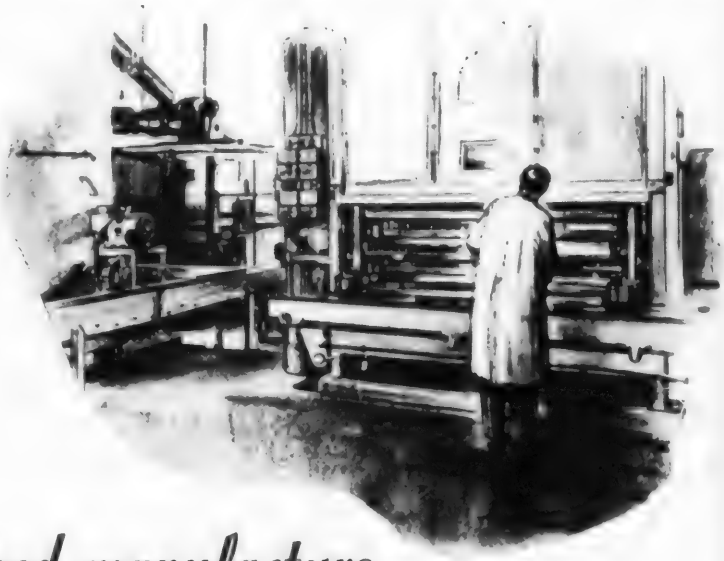

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Spirax methods improve heat transfer from steam by reducing the thickness and resistance of the stagnant films of water and air on the condensing surfaces:

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3. **By high-efficiency steam trapping**; *the right Spirax Trap, correctly chosen for the job and fitted in the correct position, to discharge condensate effectively under all conditions at the rate at which the job demands.*

Spirax give also specialist advice on condensate recovery systems and flash steam recovery systems.

Please use the request slip.

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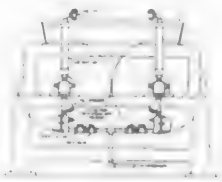
Spirax Steam Trapping and Automatic Air Venting in combined Units for each cylinder of drying machines.



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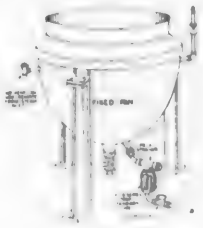

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Only comparatively few processes need anything elaborate in temperature control devices. For the majority, thermostatic control in its simple direct form is adequate, sensible and inexpensive.

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Sarco Regulators for heating or cooling operations (steam, water, brine and certain gas and oil applications); Sarco Blenders for mixing hot and cold liquids; Sarco Diversion Valves for recirculation and control of engine cooling-water temperature.

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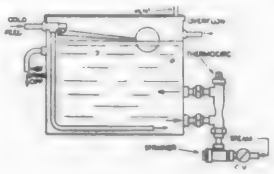

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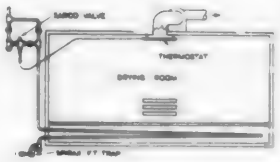
The Sarco 'Thermocirc' is a water-heater and temperature control for hot-water tanks and jacketed vessels.



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..... Pocket Manual 'How to fit Steam Traps'

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..... Bulletin 'Steam for Process'

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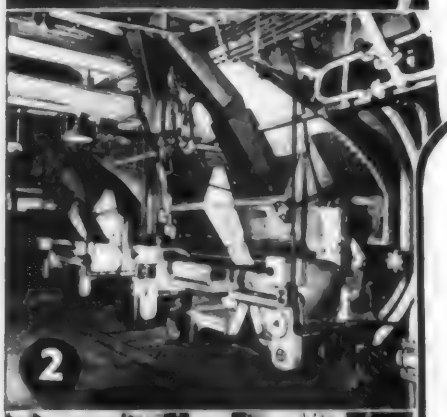

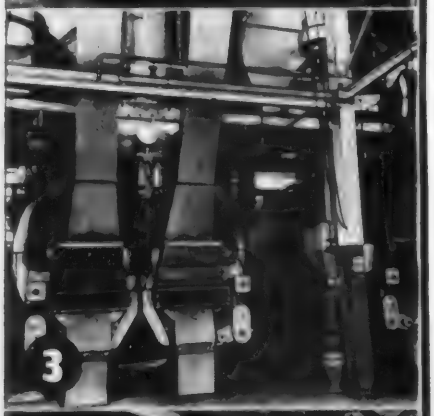

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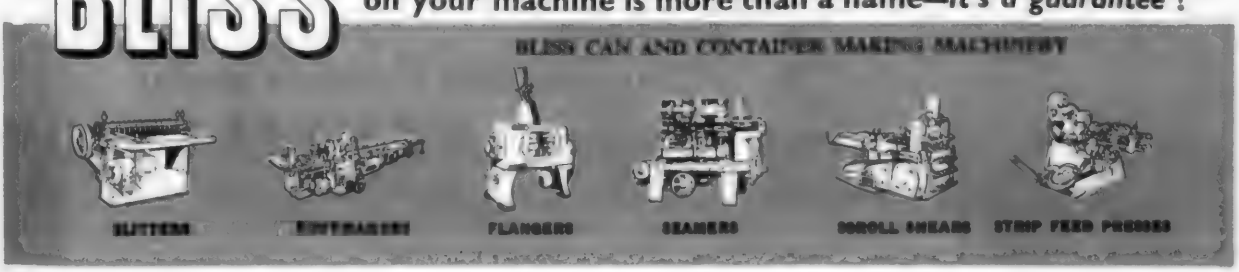

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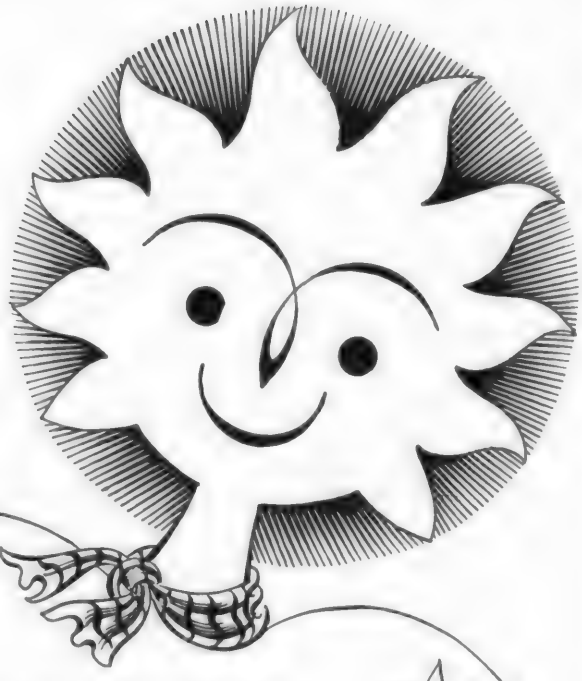

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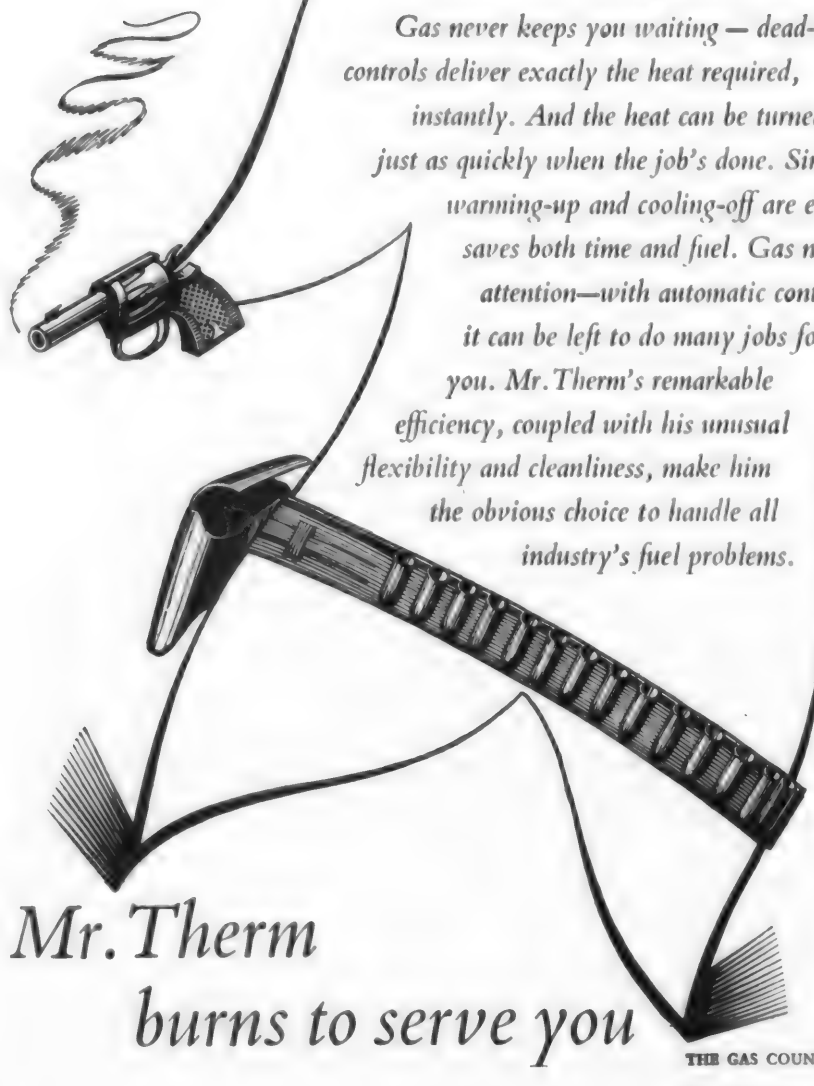

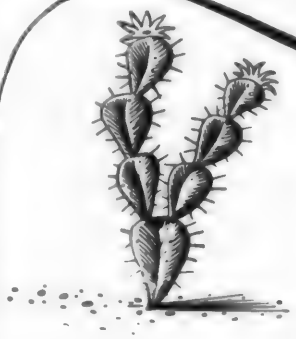

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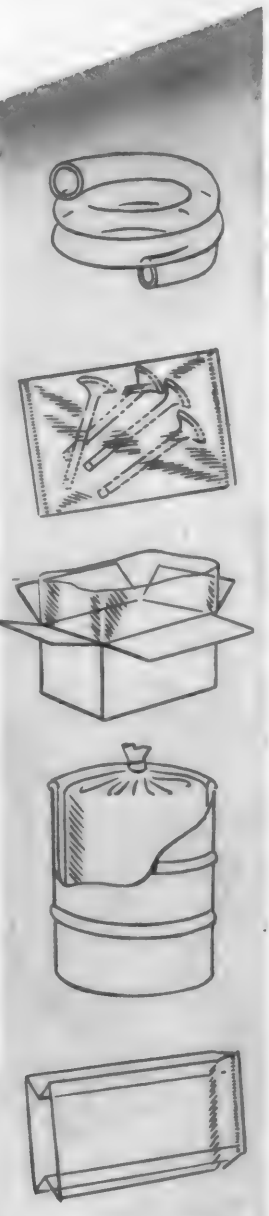

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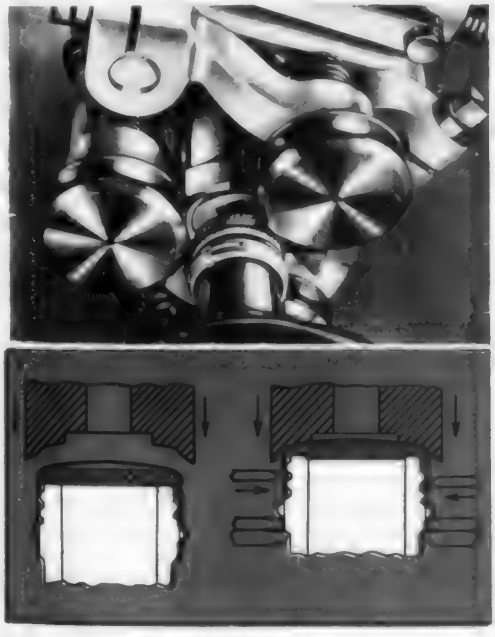

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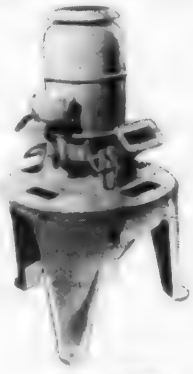

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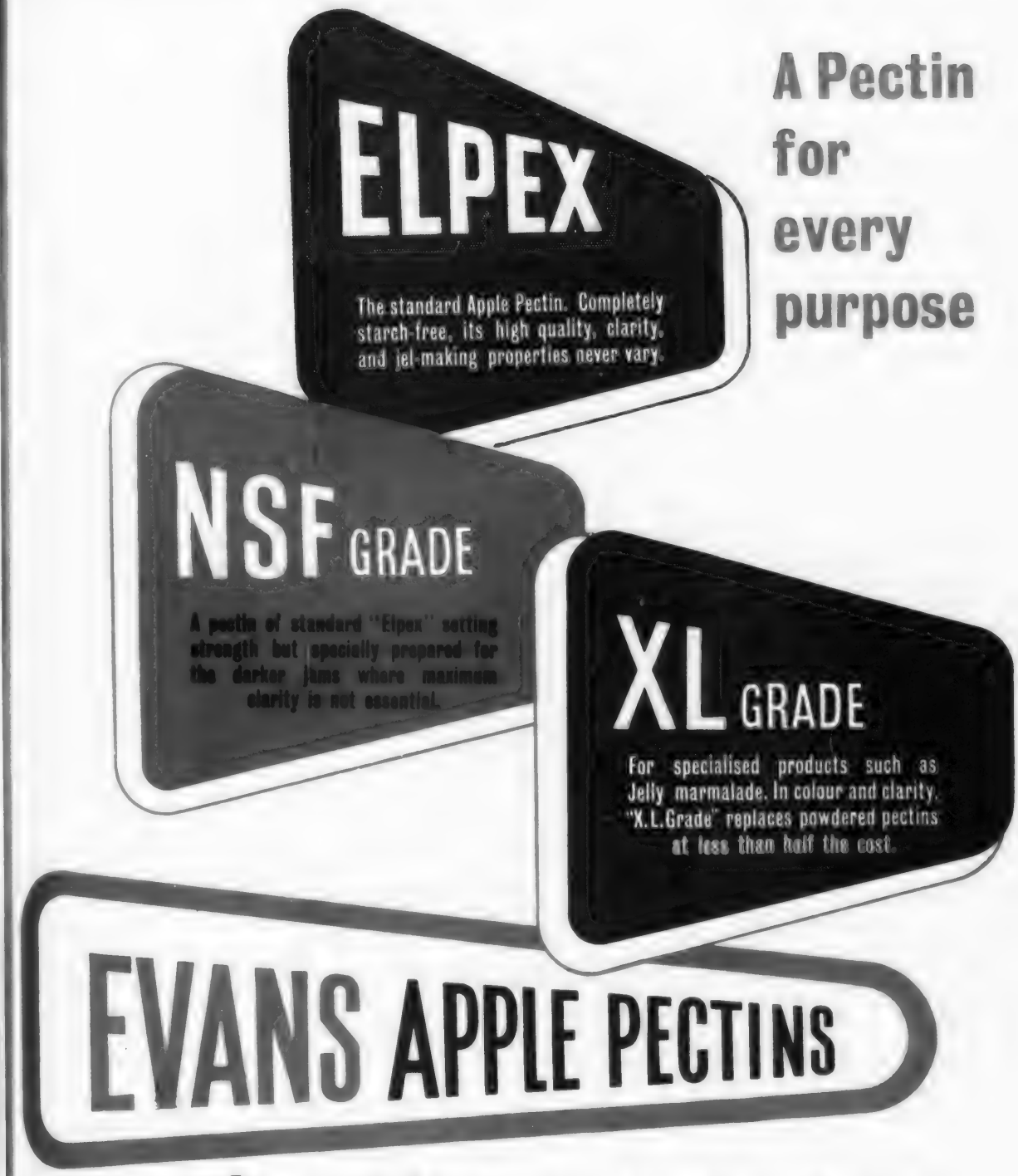
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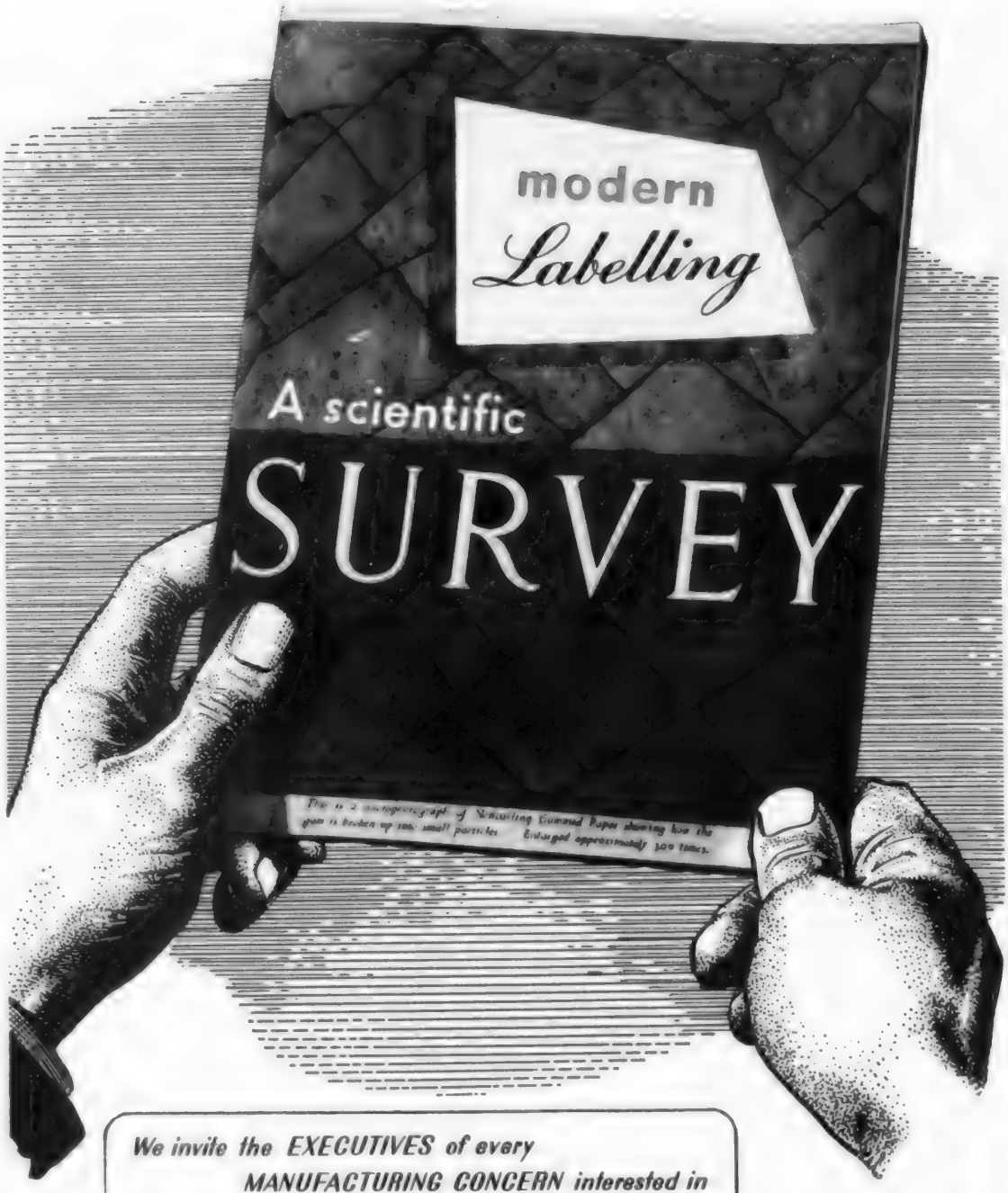

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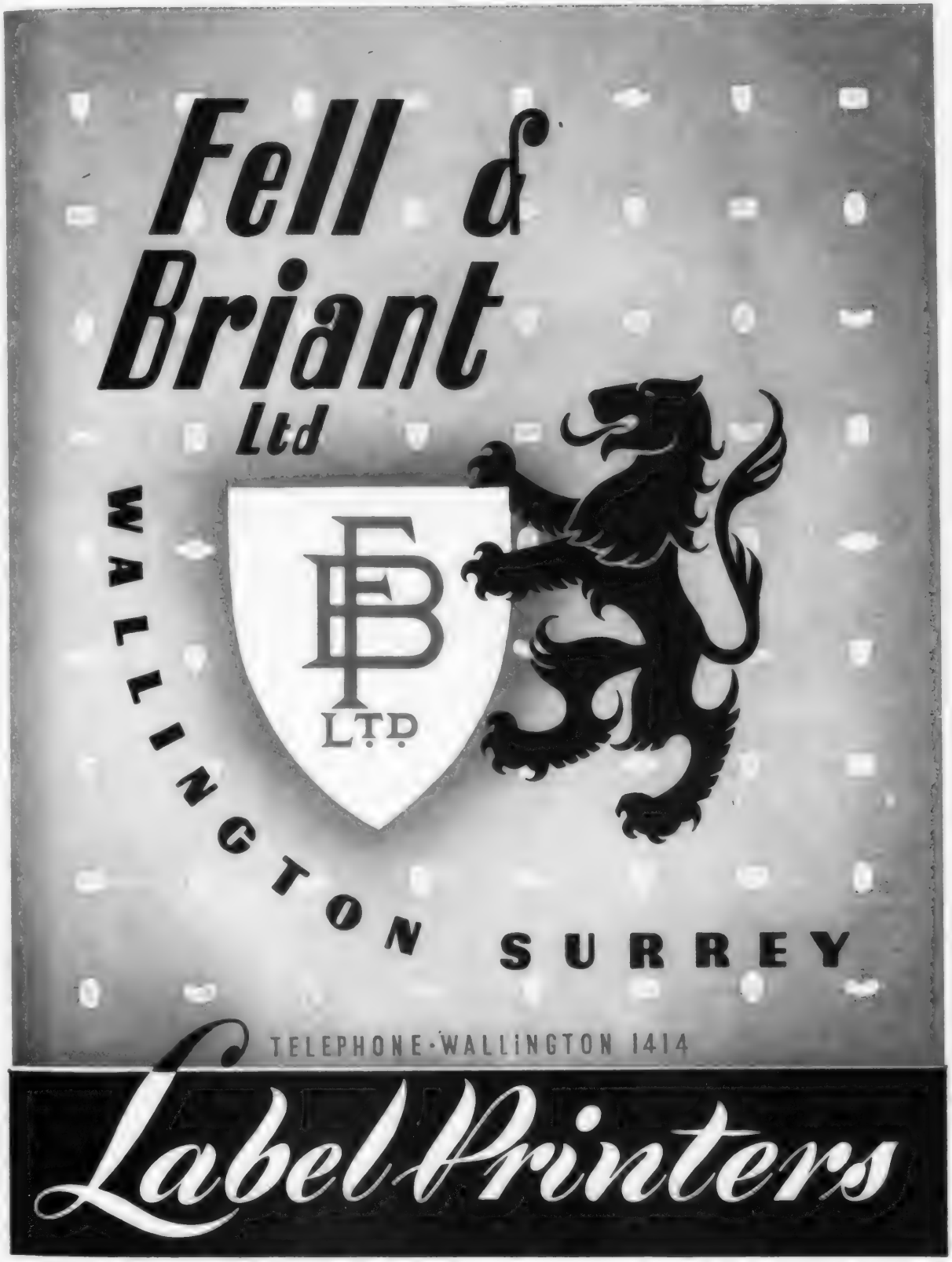
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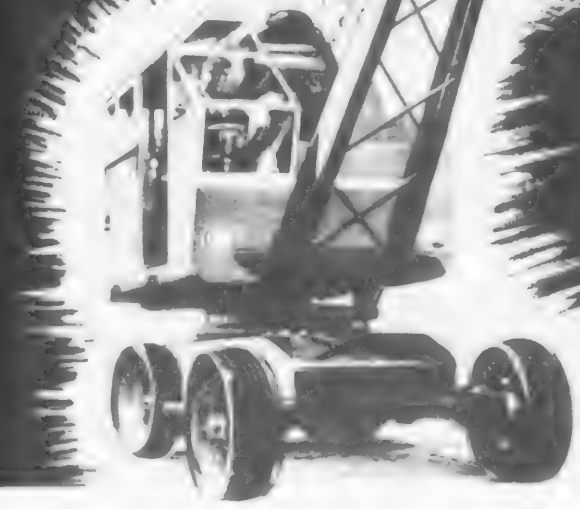

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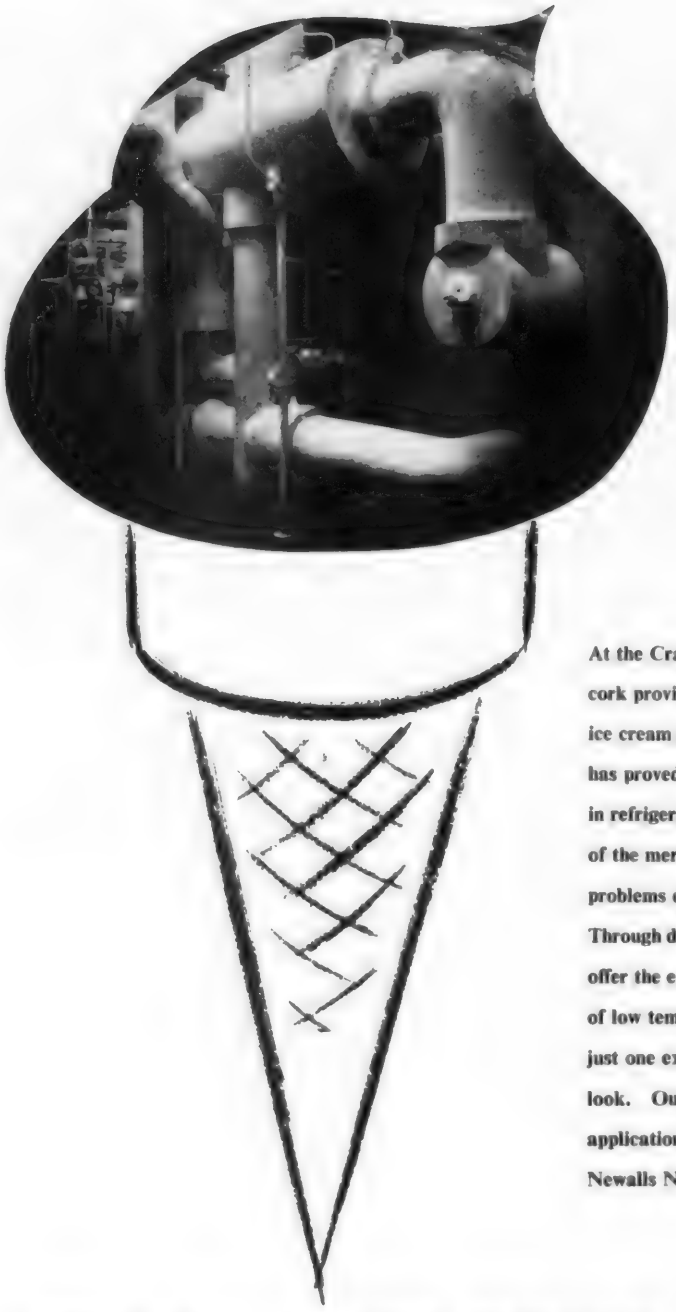

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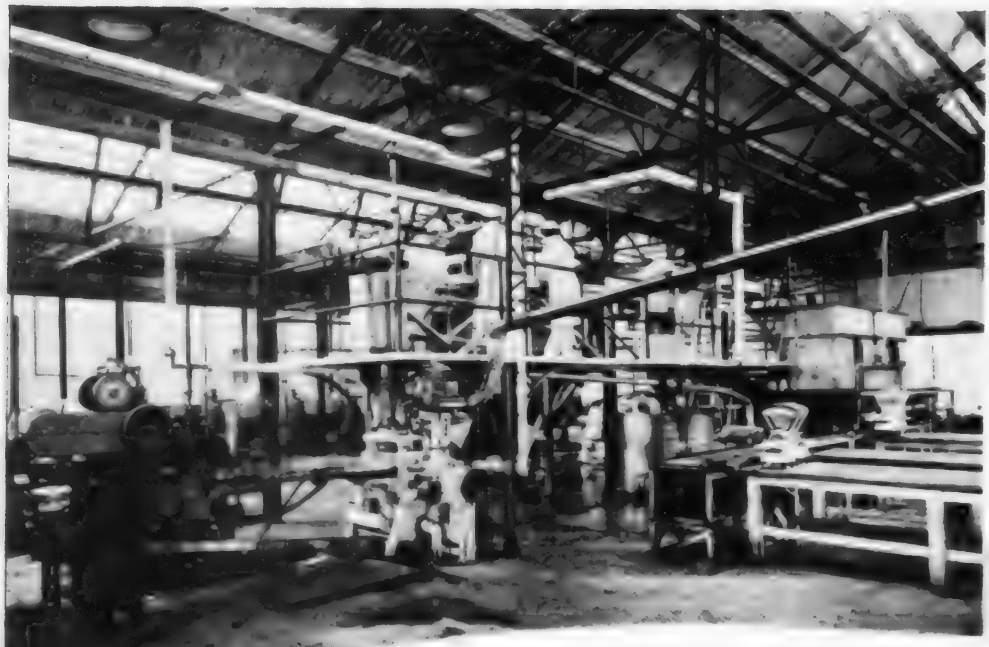

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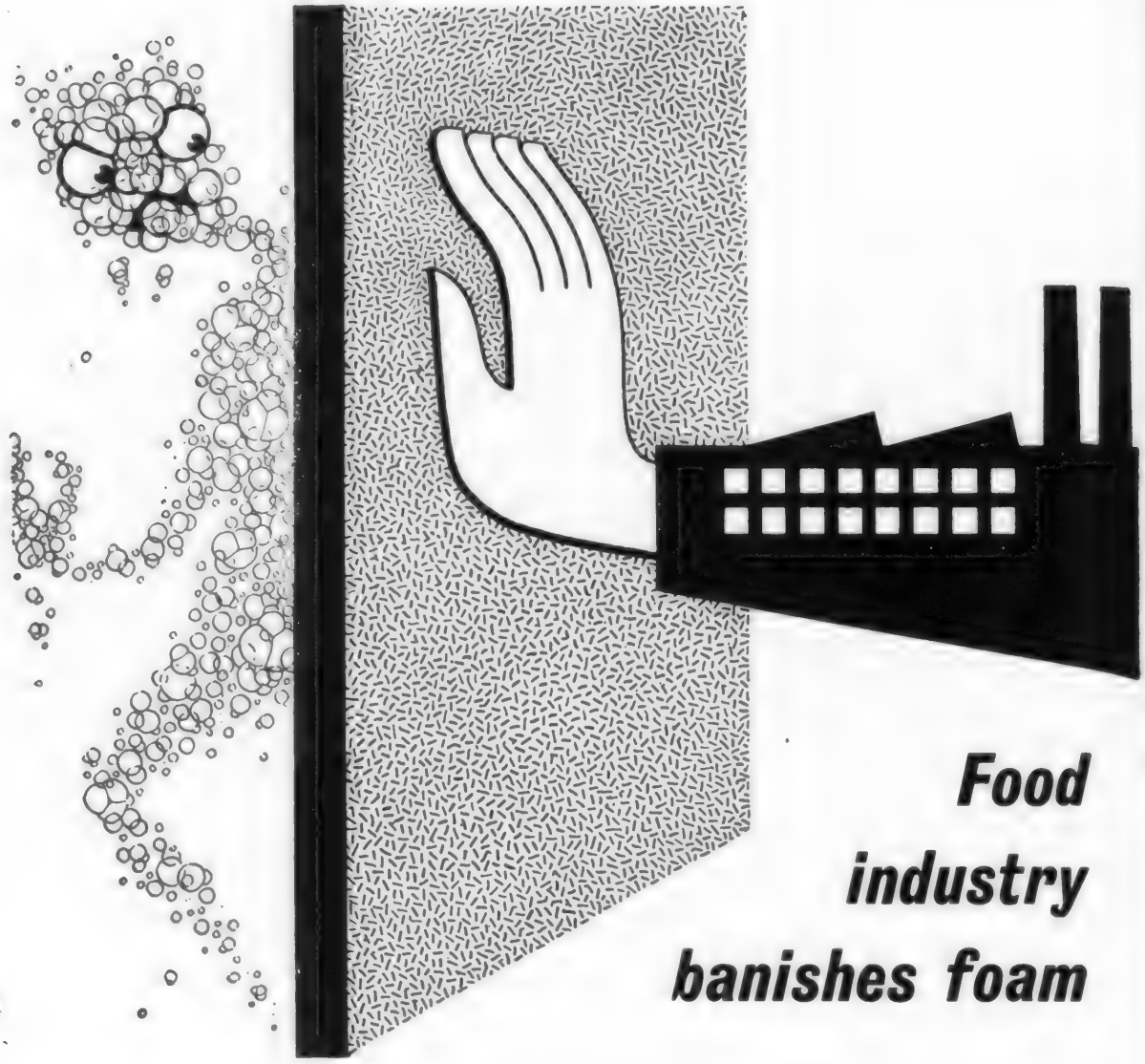

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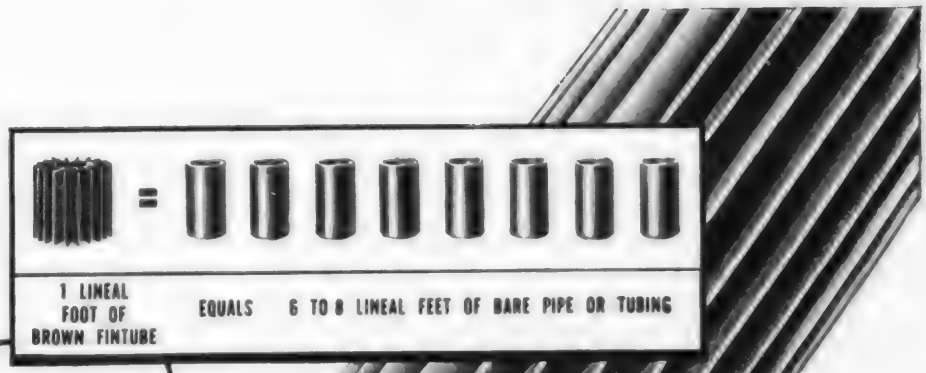

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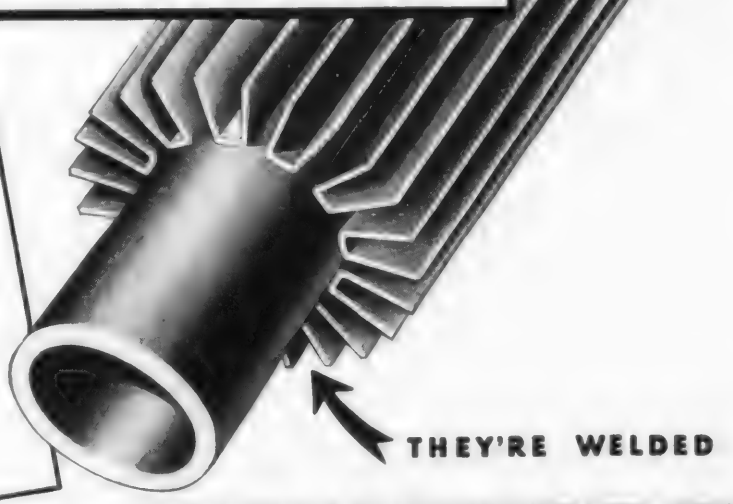

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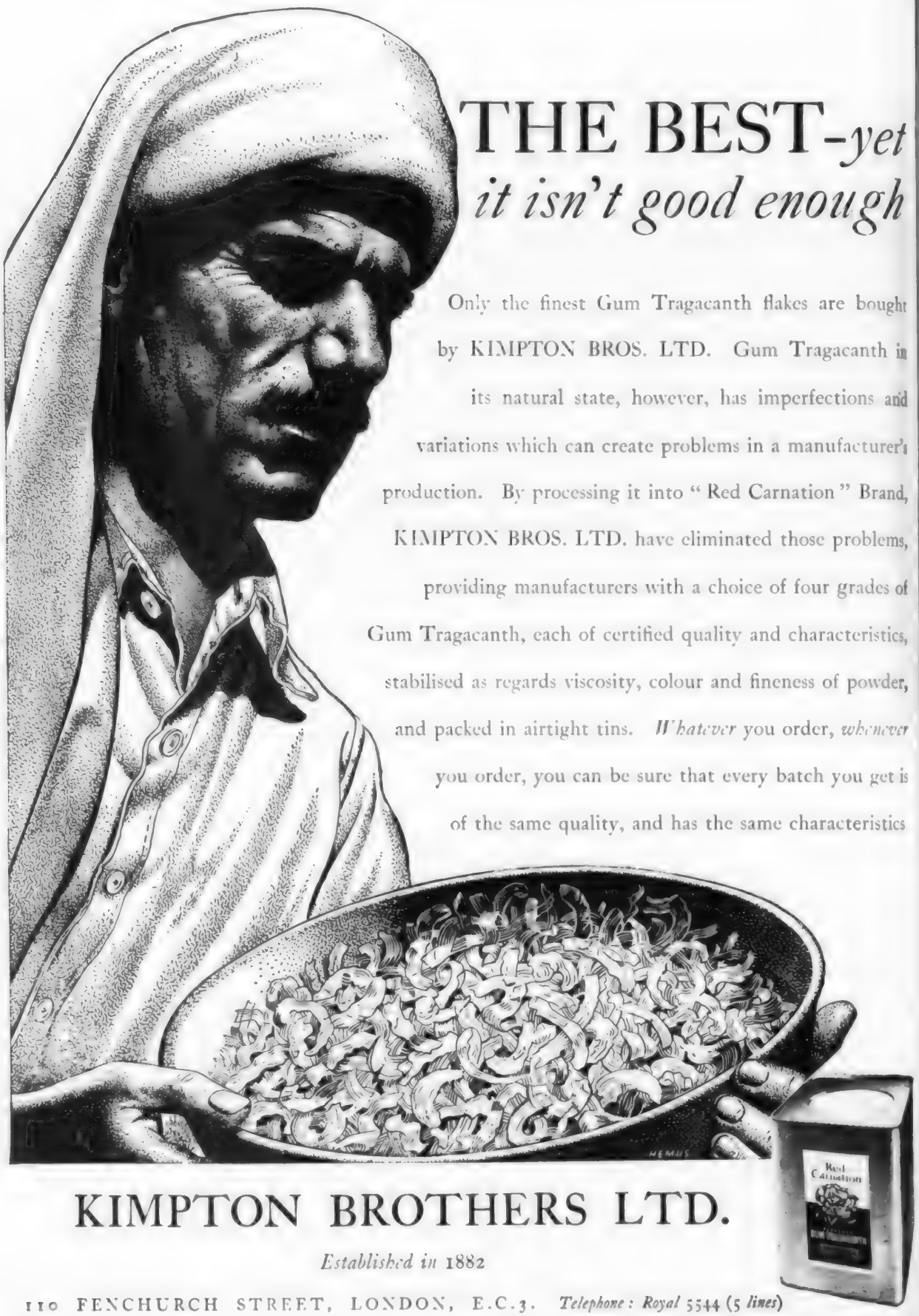

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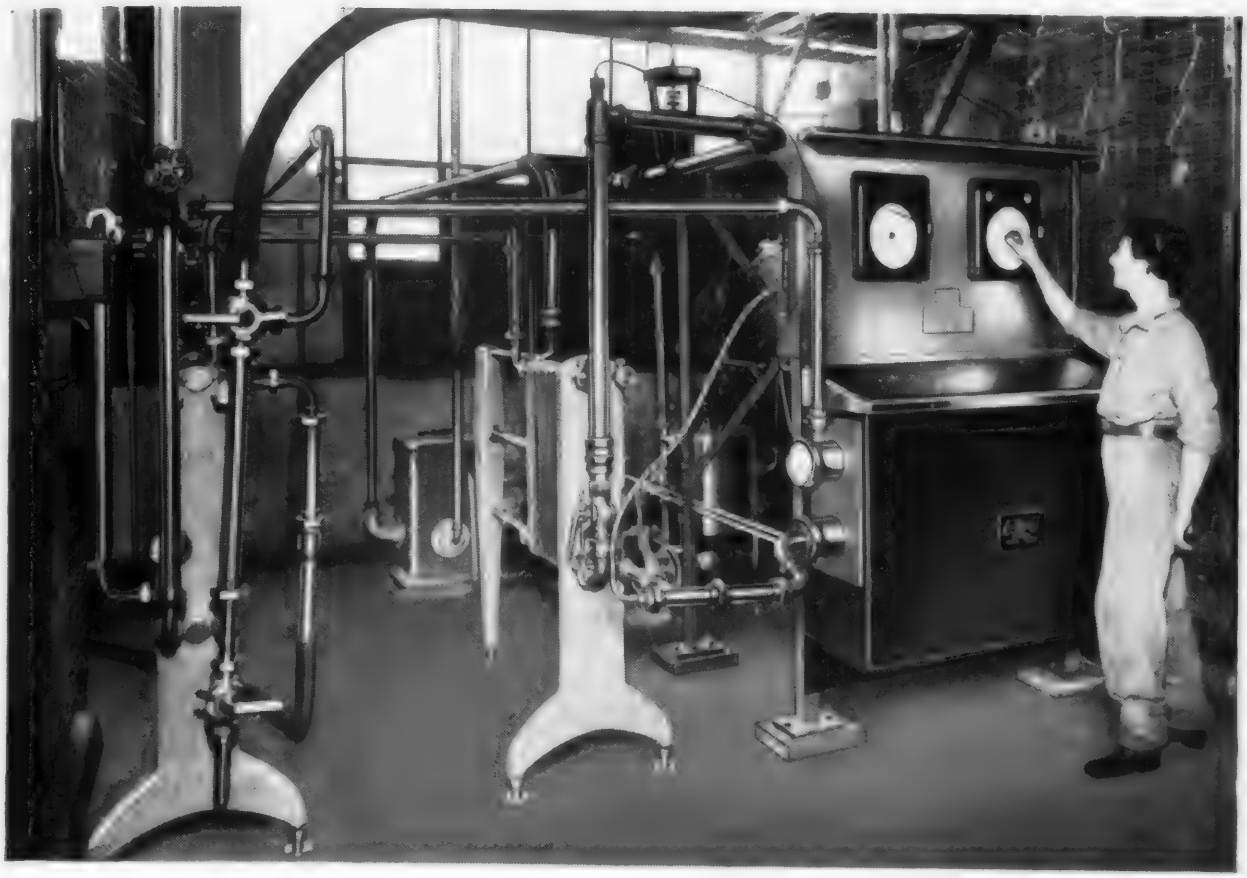

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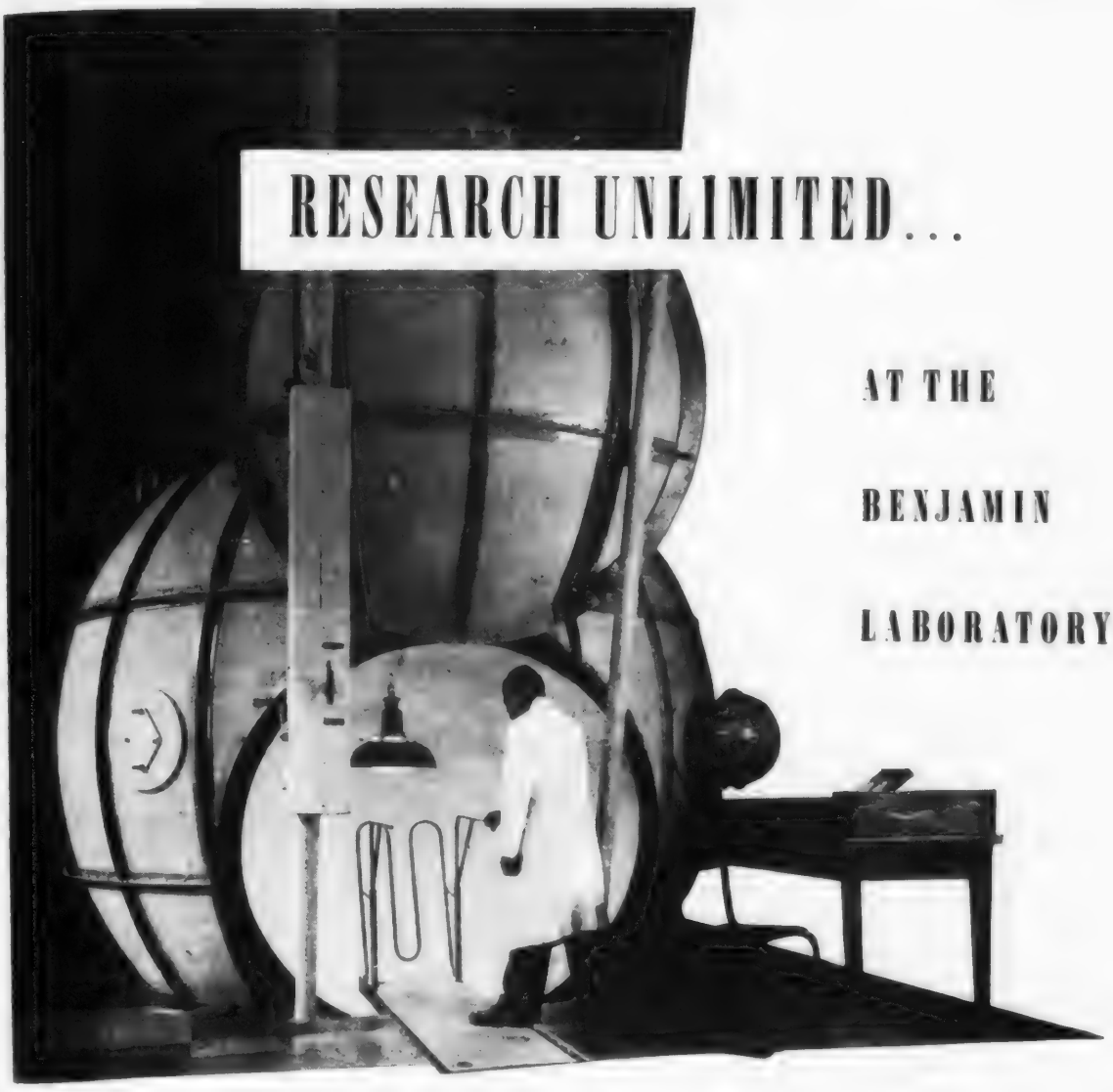

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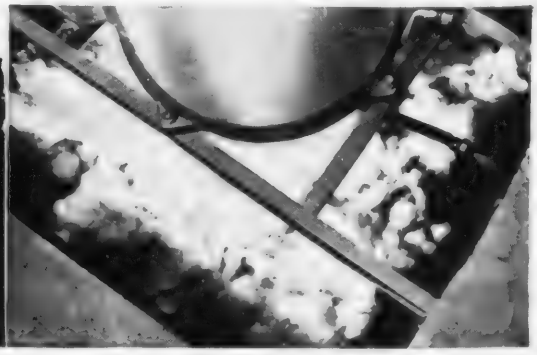

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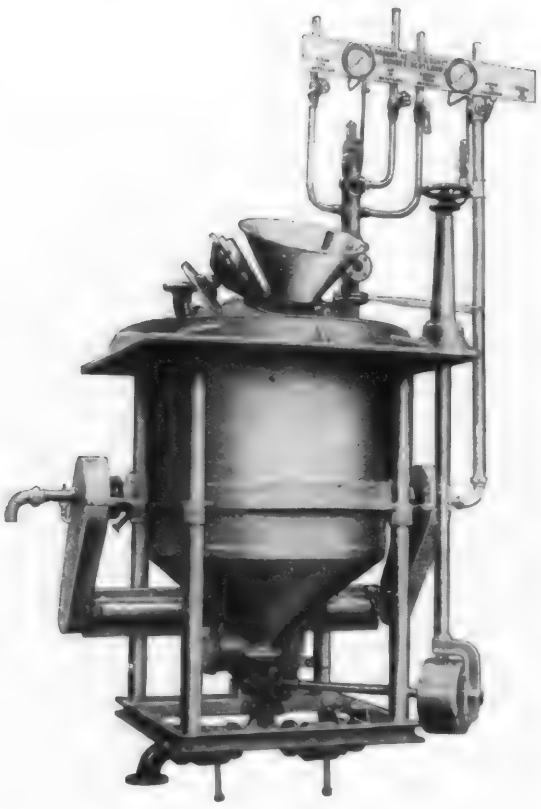

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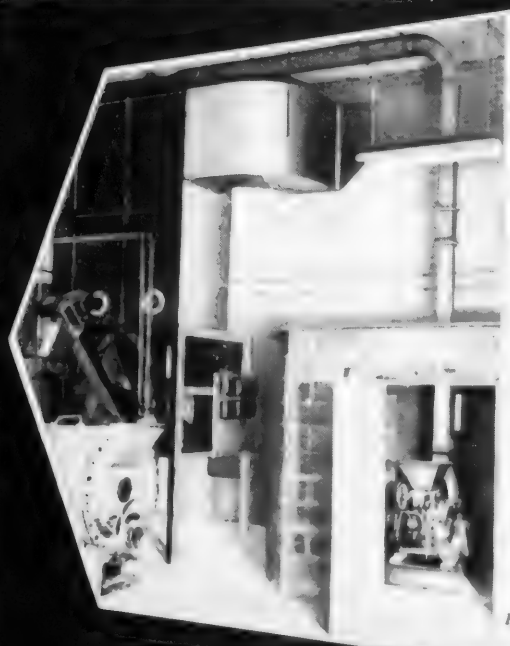
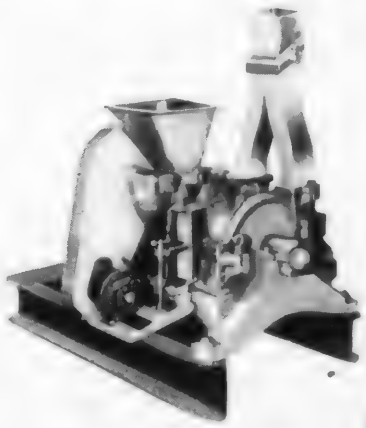


Left : Typical installation of No. 6 MIKRO - ATOMISER *and* MIKRO-FIL UNIT *in large chemical plant.*



Right : No. 6 MIKRO-ATOMISER

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FOOD MANUFACTURE

Vol. XXIX. No. 2 · Published Monthly · February 1, 1954

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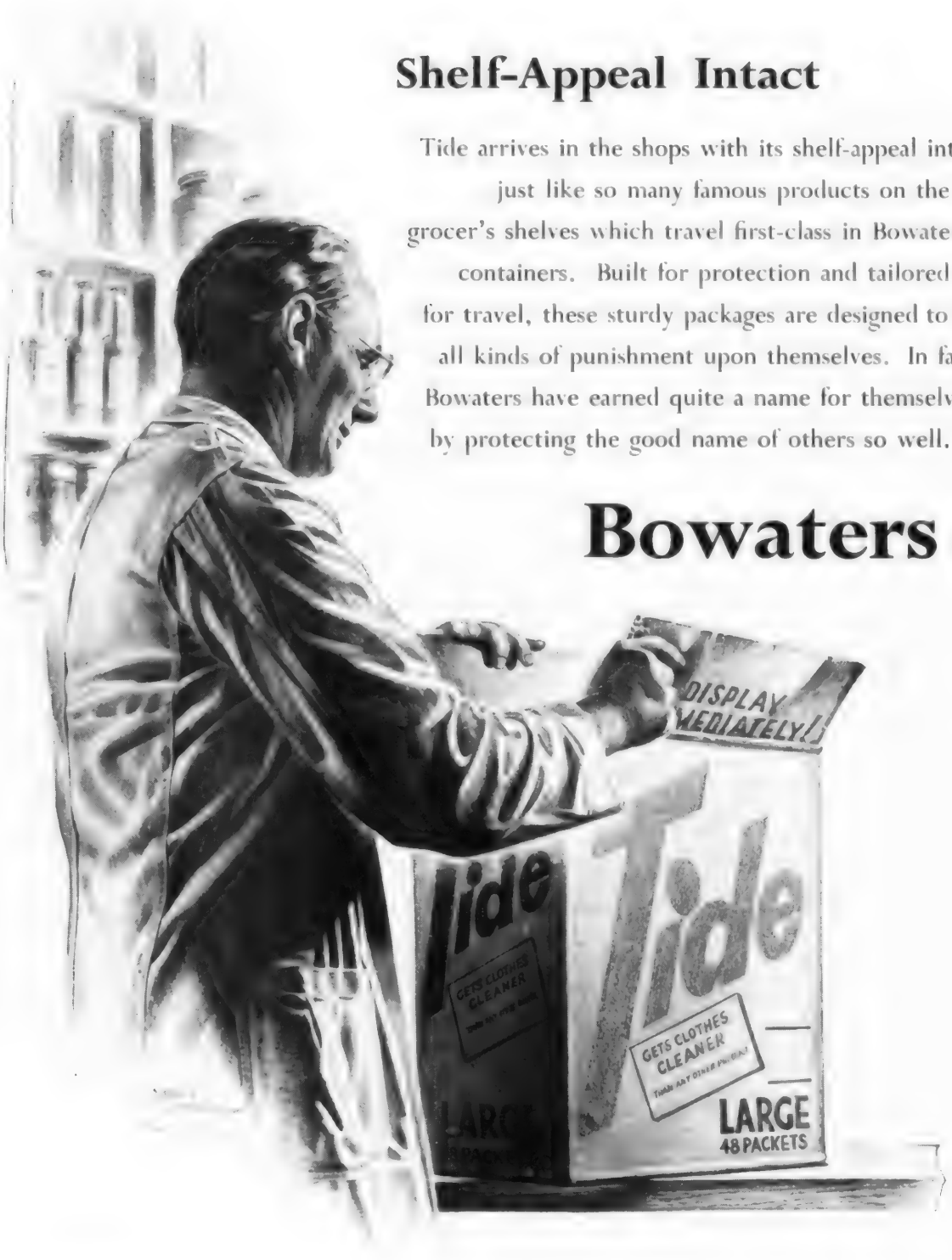
Bowaters



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FOOD MANUFACTURE

Vol. XXIX, No. 2 February 1, 1954

Trade Descriptions

THE far-reaching amendments of the law relating to "trade descriptions" and "false trade descriptions," introduced by the new Merchandise Marks Act, 1953, have now come into operation.

Under the new Act, "trade descriptions" have been extended to cover statements concerning "the standard of quality of any goods, according to a classification commonly used or recognised in the trade" or "the fitness for purpose, strength, performance, or behaviour of goods," so that mis-statements as to any such matter will also constitute an offence.

Thus to say untruly of goods that they are "firsts" when they are "seconds," or that they "will open any tin" when they will open only circular tins, or that "they (*i.e.* electric bulbs) will burn for 1,000 hours" when they can last for only 100 hours, to give a few examples, will now clearly be offences under the Act.

Under the previous law, a statement to be regarded as "false" had to be "false in a material respect" with regard to the goods in question, although it was also extended to include "any alteration in a trade description making that description false in any respect."

It was therefore possible to skirt round the law by using descriptions which, although they might on a strict construction of phraseology be within the boundaries of the law's requirements, were nevertheless likely to mislead.

The new Act accordingly has extended the definition so as to include "misleading" trade descriptions as well. Thus to say of wine that it is "sherry-type" when it is not sherry in any sense of that word, or by means of drawings or paintings on the label of a bottle to give an indication that it contains whisky, or a "wine" when that is not the case, or again to print in large letters on a label "wool" and then to add in very small type "and cotton," would all be offences under the new law.

The whole subject of trade descriptions is very complicated. Only a general outline can be given of the object and purpose of the amendments contained in the new Act. In fact, every description in use which might be doubtful will probably require individual consideration.

Public Health

DESPITE the efforts of medical officers of health and others to educate food handlers and the general public in their responsibilities in the production of safe meals, the hope expressed by the Ministry of Health in 1951 that the fall in food poisoning would be continued in future years has not been realised. In his latest report, the Chief Medical Officer of the Ministry of Health states that the total outbreaks of food poisoning of all types during 1952 numbered 3,519, compared with 3,347 in 1951.

As in previous years, meat and meat products were associated with most of the outbreaks in which the vehicle of infection was known. If the 85 canned meat outbreaks which have been reported since 1949 are added to the 670 outbreaks caused by processed and made-up meat dishes, it can be said that from 1949 to 1952 between 55 and 60 per cent. of all outbreaks where the vehicle of infection was known were due to these products alone.

It is evident that still greater efforts must be made to ensure that all food products are handled hygienically and prepared and stored in such a way that they are safe to eat. Though seldom a cause of death, food poisoning causes a great deal of unnecessary minor illness and discomfort.

Bacteriology of Dried Eggs

A STUDY by Treva C. Kintner and Margaret Mangel of the Department of Home Economics, University of Missouri, to check the influence of temperature and sugar concentration on the survival of both Staphylococci and Salmonellae experimentally inoculated into dried eggs used in preparing custards and puddings has recently been reported (*Food Res.*, **18**, 5, 492).

The authors' conclusions were that the minimum temperature for thickening egg, 78° to 86° C., did not destroy all bacteria inoculated into the dried egg in these puddings. However, under the conditions of this experiment, the number of micro-organisms was reduced to a minimum and the growth was inhibited in all cases for at least three hours. These puddings, like all other cream puddings or fillings, may be potentially dangerous if contaminated egg, either fresh, frozen, or dried, is used, although prompt refrigeration minimises this danger.

During their preparation, the stirred and baked custards were maintained at temperatures of 91° to 93° C. at which none of the inoculated bacteria remained viable.

Danger of food poisoning from the use of contaminated eggs in such products as puddings and custards would appear to be remote if these products are adequately heated and refrigerated. It is particularly important to avoid contamination after cooking since these products, unlike the acid salad dressings, provide a favourable medium for bacterial growth.

Treatment of Potatoes for Dehydration

A STUDY has been made by M. Simon, J. R. Wagner, V. G. Silveira, and C. E. Hendel of the effects of piece, size, and shape, and of calcium chloride treatment on preparational losses, drying time, bulk density, rehydration rate, and relative preference values of dehydrated Irish potatoes (*Food Technology*, **7**, 11, 423).

With the Idaho Russet Burbank potatoes employed in this study, the use of calcium chloride for firming made it possible to produce dehydrated potatoes of desired thickness ($\frac{1}{8}$ in.) which did not slough or become mushy during rehydration and cooking. Potatoes of $\frac{1}{8}$ in. thickness, sprayed with a solution of 0·5 per cent. calcium chloride, had the desirable properties of dehydrating more rapidly and to lower moisture content within practicable time than did untreated potatoes of $\frac{3}{16}$ in. thickness (the present U.S. military specification requirement).

Sensory tests showed that treated potatoes of $\frac{3}{8} \times \frac{3}{8} \times \frac{1}{8}$ in. dimensions were approximately equal in quality rating to the untreated product of specification size ($\frac{3}{8} \times \frac{3}{8} \times \frac{3}{16}$ in.), and that treated potatoes of $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{8}$ in. dimensions were rated even more highly, when served in a variety of recipe items. Furthermore, treated products were capable of withstanding more vigorous handling during storage.

The authors, while having satisfied themselves that the calcium chloride treatment is successful in the case of the particular variety of potato studied, point out that it may not necessarily be valid with other varieties and that further work would be required to establish its value.

Antibiotics and Food

WHILE the benefits of using subtilin as a canned food preservative still seem non-proven, investigations on the use of antibiotics as food preservatives are actively proceeding. At the autumn meeting of the American Chemical Society, research by the Pacific Fisheries Experimental Station on aureomycin as an additive to ice was promisingly reported; terramycin was also said to be effective. As little as one part per million of aureomycin added to flake ice appreciably lengthens the storage life of freshly caught fish. The immersion of fish in a very dilute aqueous solution of the antibiotic soon after catching, followed by normal ice-pack storage, is also efficient. This work has been conducted not only on a small scale but also on a pilot-plant installed on some Pacific fishing vessels.

Several antibiotics have been successfully used in preserving the freshness of leafy vegetables. Soft rot, which often occurs even more rapidly when these vegetables are taken out of refrigerated storage, is retarded by spraying with antibiotic solutions. In the United States it is common commercial practice to pack spinach and similar vegetables in plastic film bags; the spraying as a prepacking operation greatly delays natural deterioration.

The most effective of the antibiotics tested was streptomycin, but it is highly unlikely that any food authority would permit this substance to be used as a food additive; it induces resistance far too readily when used medicinally, and its value in critical illness would be even more restricted if the public absorbed minute doses with normal food.

A Chat about Food

ANY attempt to cover a wide and controversial subject in a discussion lasting 45 minutes could hardly be a success, and this was true of the recent Home Service broadcast with the title "Can't we do better than this?"

Dr. Franklin Bicknell faced fearful odds—they were three to one—and the discussion soon got out of hand, which hampered Dr. Bicknell's attempt at applying the Socratic method of approach.

It is evident that the idea of the B.B.C. was to present a programme for the layman and at intervals some of the speakers, after some very technical discussion, suddenly realised this and momentarily talked down to the listener, but on the whole, the programme consisted of short interjections by Dr. Bicknell, followed by overwhelming and documented arguments by the opposition. While the scientists all did their bit admirably, the B.B.C. technique was faulty and the discussion almost degenerated into a "free for all."

We ourselves disagree with many of Dr. Bicknell's contentions, although we question some of the arguments on the other side. The assurances of the satisfactory state of the nation's health could not have been convincing even to the layman listener. This impression is confirmed by Sir John A. Charles when he says (in his Annual Report on the State of Public Health for 1952) that "it is paradoxical that records of sickness and death should be our main index of the state of public health. The explanation is that we still lack a method of measuring directly the health of the nation."

Nobody can ignore the extraordinary prevalence of minor ills. The N.H.S. doctors' waiting rooms

are daily filled to capacity; every other person complains of some small ill or other. The astronomical sale of purgatives, aspirin, phenobarbitone, and the like indicates that people think, at any rate, that they have something the matter with them. This is not to say that all this is caused by chemicals in food or bad food; much of it can be attributed to incorrect feeding, which might well form the subject of several broadcasts.

Clearing the Fish Markets Daily

A PLEA to clear the fish markets each day is being advanced by the Aberdeen and Granton trade to meet the present difficult situation in Scotland. It is understood that an early move on these lines will be made by the trade organisations involved.

The present position is that each day's reject constitutes a danger to the following day's market in a variety of ways. It can be held over for offer in the event of a poor landing the following day or days, thus automatically depressing the levels of quality and price, in that good fish has to compete with inferior, to the detriment of both.

If the daily landings were to be cleared off the markets completely, all sections of the trade would benefit by a degree of stabilisation which has been conspicuously absent. Catchers would land fish in the positive knowledge that it would meet an open and ready market, cleared of rejects, and that the catch would make its fair market price. Wholesalers and retailers alike would both know how to operate; moreover, retailers could rely on each day's presentation being "live" and not dead from days of storage.

Meal processors would receive a steady daily delivery of an ultimately averaged weight and could lay out plant to that end. The consumer would obtain fresh fish at a steady price as a result of the stabilisation of the market.

There is a feeling in the trade that such a policy would pay, and that the present problems facing the industry could be materially solved without consumer interests being affected. It is believed that catchers would be prepared to face reduced subsidies to gain the advantages of a stabilised market.

Packaging for Biscuits

WHO is to blame for the poor condition of today's biscuit packaging? This was one of the many problems discussed between package users and package suppliers at the December meeting of the Southern Area of the Institute of Packaging. Mr. A. C. Russell of Scribbans-Kemp considered that the fault was with the British packaging machinery manufacturers, who had failed to appreciate the need for an automatic direct wrap (*i.e.* no carton). As a result of this lack of co-operation between user and supplier, large numbers of continental machines were coming into this country which could do this very job.

While agreeing that the performance of the continental machines was satisfactory, Mr. Russell considered that there was room for an entirely new approach to the problem of packaging machinery for the biscuit trade. What was wanted was a small light machine to replace the "battleship" type. Instead of a large universal machine capable of handling different sizes of packets, it would be better to develop a smaller machine which could be wheeled out of the line, if a change were necessary, to be replaced by another one.

Another suggestion was that as there always seemed to be plenty of space in a factory between the floor and the ceiling, there was no reason why both the overwrapping and sealing operations could not take place vertically instead of horizontally. This would mean a smaller machine and the use of space which at present was not being gainfully employed.

In 1952, biscuit production reached 9,000 tons per week, equivalent to 40,000,000 ½ lb. packets. At the present time, a large proportion of the weekly output is packed in 9 lb. tins, a practice not followed in the U.S.A., but the abandonment of the use of tins of this size in this country, though not imminent, might well occur in the future.

Mr. Russell called attention to two points: first, biscuits could not yet be transferred automatically from the cooling band of the ovens to the wrapping machine; second, it might be that biscuits would have to be automatically wrapped before being cartoned.

It is probable that these points have already been recognised by packaging machinery manufacturers, but if not, they cannot fail to arouse their interest.

Food and the Future

IN an analysis of trends of world food production ("The State of Food and Agriculture," Part II) the FAO suggests that a continued gradual increase in agricultural production can be expected in all parts of the world over the next four years if current programmes and estimates are achieved.

The fastest rate of progress is planned in the Far East, where food supplies are still well below their already inadequate pre-war level, and in Latin America, where the rate of population growth is extremely high, the other regions falling between these extremes. Although the programmes thus correspond broadly to the needs of the different parts of the world and will help towards correcting the wide disparities in supplies between regions, the world food problem will remain basically as it is. Supposing that all the plans and estimates in the Far East are fully achieved, which is by no means certain, food supplies per head in that region will still not have

caught up with the pre-war level and will remain far lower than in most other parts of the world.

The largest increases in production per head in individual foodstuffs are expected for meat, eggs, some fruits, coffee, tea, and cocoa. Production of wheat may be below current high levels, while that of all cereals taken together and of milk should remain about the same as at present. There should be no question of scaling down production programmes because of the fear of surpluses in some sectors; one or two bad harvests could wipe out much of the expected improvement. Nevertheless the time has come for a more selective approach to agricultural expansion, and a close watch will have to be kept on the situation. There may be times when international discussions might usefully be called for a particular commodity if supplies and requirements seem likely to move out of step.

More attention should perhaps be paid to improvement of yield from existing farmed land, *e.g.* by better plant protection, greater use of fertilisers, and plant breeding, rather than by placing the main emphasis on bringing new areas under the plough, although it is agreed that considerable increases may also be expected as some of the large scale development projects get under way. By raising agricultural productivity, the cost of production can be reduced, while still safeguarding the real income of farmers. Similarly, improvements in marketing lead to lower distribution costs and thus lower retail prices, important factors when much of the increased production may be unabsorbed on account of low incomes of needy populations.

The possibility that supplies may at times exceed effective demand should not obscure the fact that most of the world's population still lacks enough food. It would be tragic and socially dangerous if we found ourselves back in the dilemma of the thirties, with excess stocks co-existing with hunger. The essential problem is to raise the purchasing power of the poorer consumers.

Cup of Char

A FRESH "stir" in the tea-pot, or perhaps a storm in a tea-cup, has followed the increase of up to 4d. a pound in the price of tea. A nation which annually consumes 470 million pounds of tea naturally became a little piqued when the Mincing Lane experts suddenly found London stocks were only 82 million pounds, and this at a time when India had reduced exports by 50 million pounds. Pepys may have called tea a "China drink," yet we only consume about 2½ million pounds of China tea annually in normal times.

While the analysis of tea discloses the presence of 4 per cent. caffeine, 12 per cent. tannin, together with several alkaloids, probably only the first two matter to the everyday consumer. Although medical reports refer to us as a nation of aspirin, Veganin, and barbiturate addicts, the maxim that "while there's dope there's hope" surely centres on the cup which a Duchess of Bedford prepared at five o'clock to avoid "that sinking feeling," a phrase she coined.

When Gissing wrote of the English genius of domesticity shown in making afternoon tea in the drawing-room, he understated the case for a bleak Britain cheered by "char." Tea brewed at all hours in "prefab" and parlour, in the "lounge" which has replaced "drawing-room," or in a multitude of snack bars and of works canteens: such is the British way of life.

American operatives were surprised recently when British workmen installing a machine in the States immediately stopped work for a tea "break." Our forces overseas have won notice particularly for their tea-brewing, immediately they have dealt with a spot of trouble brewing. As for the American critic armed with such statistics as the number of times tea-drinking fills the gaps in English novels (48 times in "David Grieve" for example) he might apply his ardour for research in finding out what becomes of all the tea-cups on British railways. Ten thousand cups lost per day adds considerably to the cost. Since the average Briton dislikes drinking his national anodyne from a paper cup, since he prefers a china cup if not China tea, he must mend his ways rather than grouse about the extra penny or so.

Sophism on the Ferry

THE magic of names was suggested at supper time in the Night Ferry train not long ago. We were handed a bill of fare, stigmatised by our travelling companion as an insult to his intelligence. The compiler first goes all (or nearly all) Gallic, starting off with "Soup du Jour with Croutons," a *potpourri* reminiscent of the first attempts of a daily tripper to Boulogne. From then on, the going is honest-to-goodness "cookery book" with a slight injection of fantasy in the item "Grilled Dover Sole with Lemon *Wedges*." (The italics are ours.) Further down, the list is brightened up with a little bit of advertising technique—"*Oven Crisp* Rolls and *Curled* Butter. 9d."

There are more artistic quirks of terminology. Quite good fish are made to masquerade under names suggesting more aristocratic species. Catfish are "rock salmon"; witches won't sell so readily as when they are called "soles," and dogfish sometimes rejoice in the puzzling name of "flake."

We gather that the White Fish Authority may in the near future require traders to call a spade a spade; whether we shall enjoy our dish of catfish as much as rock salmon is problematical because, as Cowper said:

> Some to the fascination of a name,
> Surrender judgment hoodwinked.

Three Centuries of Brewing

The site of Barclay Perkins and Company's brewery is rich in historical interest. On Bankside, in the reigns of Elizabeth the First and James the First, stood the Globe Playhouse of Shakespeare's days. In 1777, the site of the theatre, which had been pulled down since 1644, passed into the possession of Henry Thrale, to become part of his brewhouse. One of the oldest breweries in London, the Anchor Brewery, described in this article, has built up during the years an organisation incorporating the best of modern methods and equipment.

THE story begins in the year 1616, when a brewhouse was started on a site adjoining the Globe Theatre. During the next hundred years or so, several changes of ownership occurred; in 1692 one Edmund Halsey ran the business in partnership with James Child, and on his death in 1729, Ralph Thrale succeeded Halsey as owner. His son, Henry Thrale, became head of the brewhouse, having entered his father's business about 1748. In 1763 he married Miss Salusbury—this was the Mrs. Thrale who captivated and dared to bully the gruff Doctor Johnson, and whose wit and charm were the delight of the Johnsonian age.

Dr. Johnson and the Brewery

Dr. Johnson had made the acquaintance of the Thrales in 1765 and spent much time in their house in Streatham in company with Burke, Beauclerc, Boswell, and many other distinguished men who came to Mrs. Thrale's Salon. He had his own room at the brewhouse and wrote many of his famous works there. His favourite chair is still in use in the Board Room; letters, documents, and a large number of other relics of his time, including the knocker of the door of his house in Bolt Court, Fleet Street, are preserved in the Brewery Museum.

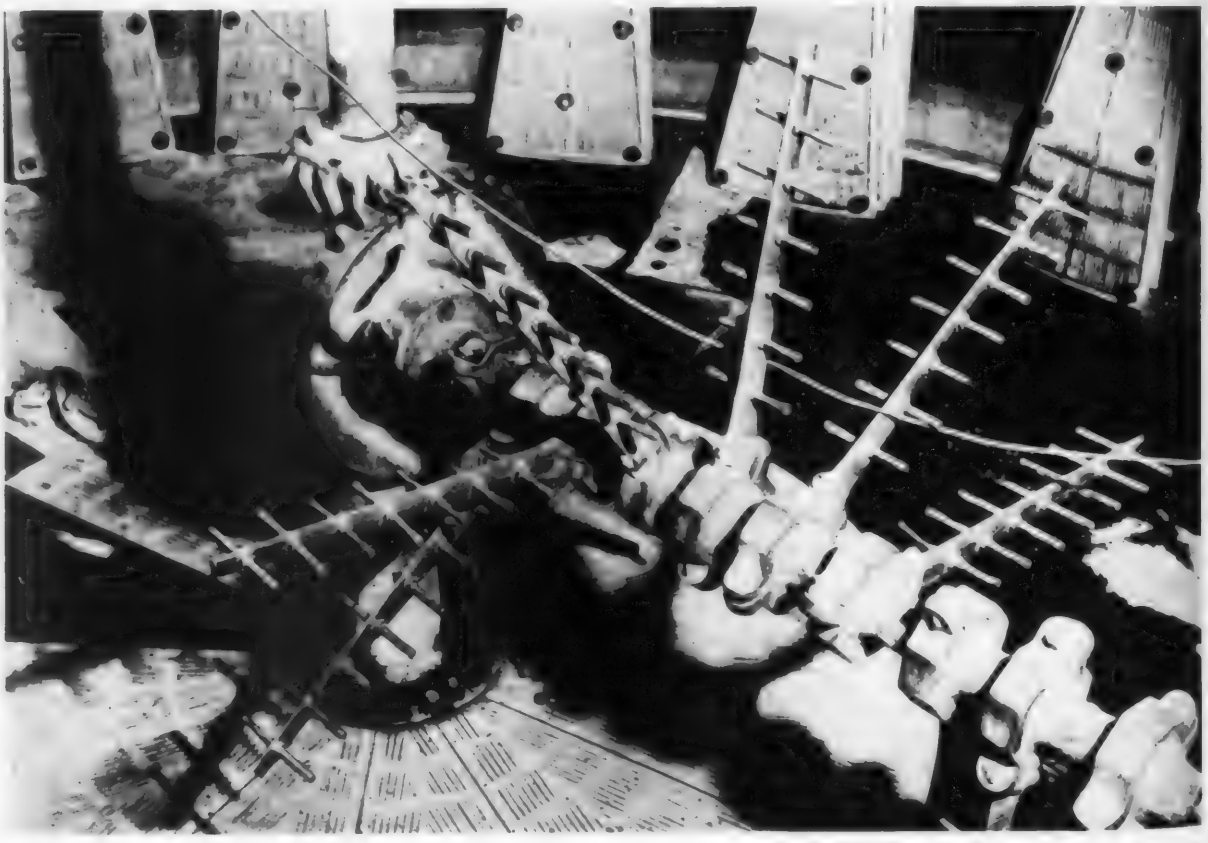
Dr. Johnson encouraged Mrs. Thrale to help in the business and it appears from one of her letters to John Perkins, Thrale's manager, dated September 28, 1773, that she must have undertaken some salesmanship. She wrote to the effect that "Cardess of the Blue Posts has turned refractory. . . . I called on him today however, and by dint of unwearied solicitation (for I kept him at the coach side a full half-hour) I got his order for 6 Butts more as a final Tryal." And again: "I was obliged yesterday to go and court a dirty gaoler to suffer our Brewhouse to serve his tap, and when I complained even with tears to Mr. Johnson of the Indignity, 'Dear Lady,' says he, 'your Character is exalted by it, I tell you it advances in heighth.'"

In 1776, the tide had evidently turned, as in a letter to Mrs. Thrale, Johnson wrote: "Today I went to look at my places at the Borough. I called on Mr. Perkins in the Counting House. He crows and triumphs, as we go on we shall double our business."

On the death of Mr. Henry Thrale in 1781, the brewery was purchased by Mr. Robert Barclay, who took into partnership Henry

The malt is crushed in the mill prior to infusion with hot liquor to produce wort.

Above: **The mixture of liquor and crushed malt falls into the mash tun fitted with a strainer.** *Below:* **The interior of the mash tun showing the rakes and the gunmetal slotted plates which form a strainer through which the wort flows.**

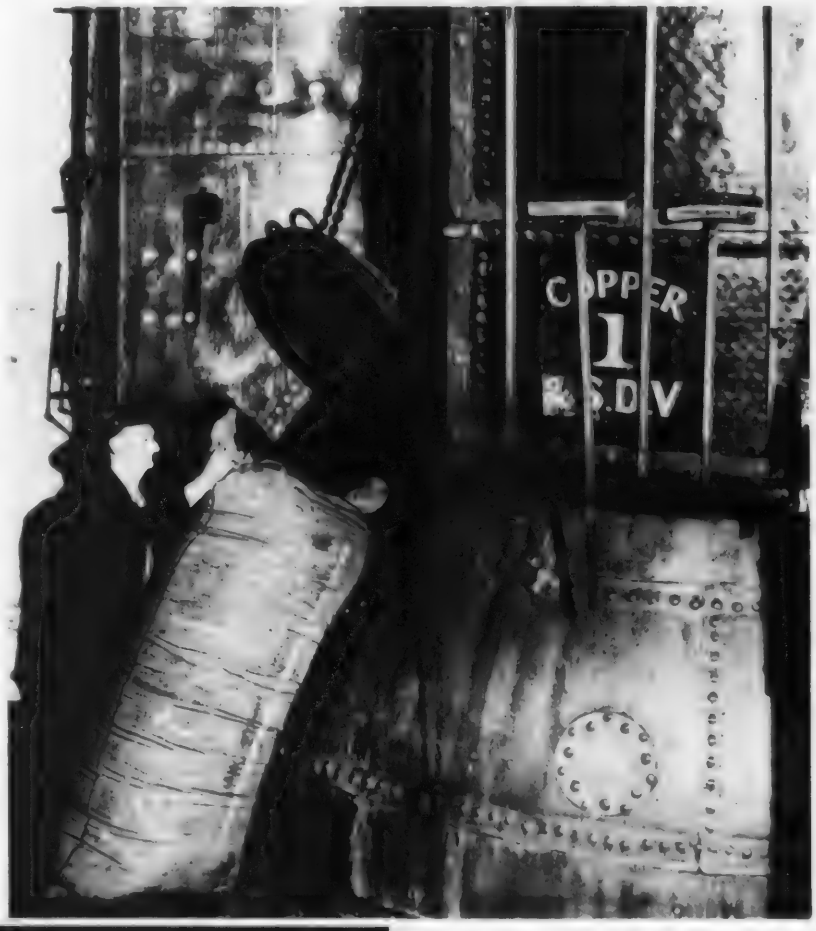


Thrale's manager, John Perkins. In 1896 the concern was made a public company, the first directors being Robert Barclay, Alfred Henry Bevan, Augustus Frederick Perkins, Frederick Lincoln Bevan, Granville Bevan, and Hubert Frederick Barclay. Further expansion took place in 1929 when Style and Winch, The Royal Brewery, Brentford, and the Dartford Brewery Co. became associated with the company.

The Malting Process

The manufacture of beer is a lengthy and complicated process starting with the malting of barley.

The barley is grown in Norfolk and the malting process is carried out in a special plant on the spot. The first steps are the steeping of the barley corns in water and, when enough water has been absorbed, the spreading of the swollen grain on a suitable floor. The depth of the barley on the floor is adjusted according to the temperature of the air, sufficient heat being generated to cause the germ inside each barley corn to start to grow. During this growing process an enzyme (cytase) is released from the germ and enters into the endosperm (that part of the barley containing the starch) and dissolves the hard cellulose surrounding the starch granules. This process being complete, the barley is loaded into a kiln where by heating the action of the enzyme is stopped, and the necessary flavour imparted to the starch. The finished malt is then delivered to the brewery for storage in silos until required.

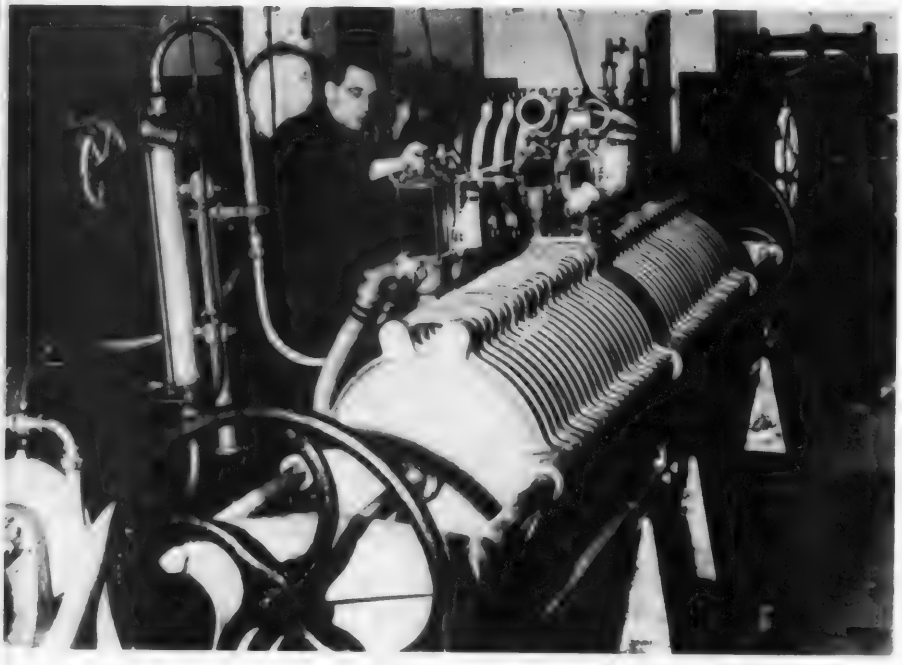


In the copper, the wort is boiled with the hops. This particular copper has been in constant use since 1832.

The malt from the silos is conveyed mechanically through a cleaning machine for the removal of the rootlets. These rootlets are known as malt culms and are a valuable protein food used for cattle.

From the cleaning screens, the malt falls between the rollers of a grinding mill and is crushed prior

The " rocky " yeast head characteristic of an early stage of fermentation.



to the beginning of the brewing process proper.

The Brewing Starts

The first stage of the brewing process is the infusion of the crushed malt with hot *liquor* (the word "water" is not used in a brewery for obvious reasons; at one time, severe penalties were imposed on any employees who disobeyed this rule), after the addition of the necessary salts.

The mixture of liquor and crushed malt falls into the mash tun fitted with a strainer. The mash, as the mixture is called, is allowed to rest for approximately two hours at a temperature conducive to diastatic action, the diastase converting the starch into dextrins, malto-dextrins, and maltose.

In the bottom of the mash tun are openings through which the liquid (the wort) is drawn off from the mash. More liquor is sprayed over the mash and, after some hours, all the soluble solids are washed out, and the residue left in the mash tun. This residue, known as brewers' grains, is a valuable feedingstuff for cattle.

Boiling the Wort

The next stage is the boiling of the wort, during which a proportion of hops is added. This is carried out in huge coppers, some of which have been in constant use since 1832 when direct firing was used, now replaced by steam coils. After being boiled for about two hours, the wort is transferred to vessels fitted with a strainer on which the hops settle, forming the filtering medium. The liquid runs off bright, the spent hops retaining most of the sedimentary matter, which consists of albuminoids thrown out of solution during the boiling process.

After the wort has run through cooling coils to reduce its temperature to a point at which fermentation can proceed, it flows into large vessels made of copper, stainless

Above: **The beer is racked into wooden or metal casks.**

Centre: **A pulp filter.**

Below: **Bottles are loaded into one of the bottle washers.**

steel or wood, and yeast is added. Fermentation proceeds for a time varying from 72 to 90 hours, during which the yeast feeds on the sugars of the wort, producing alcohol and carbon dioxide.

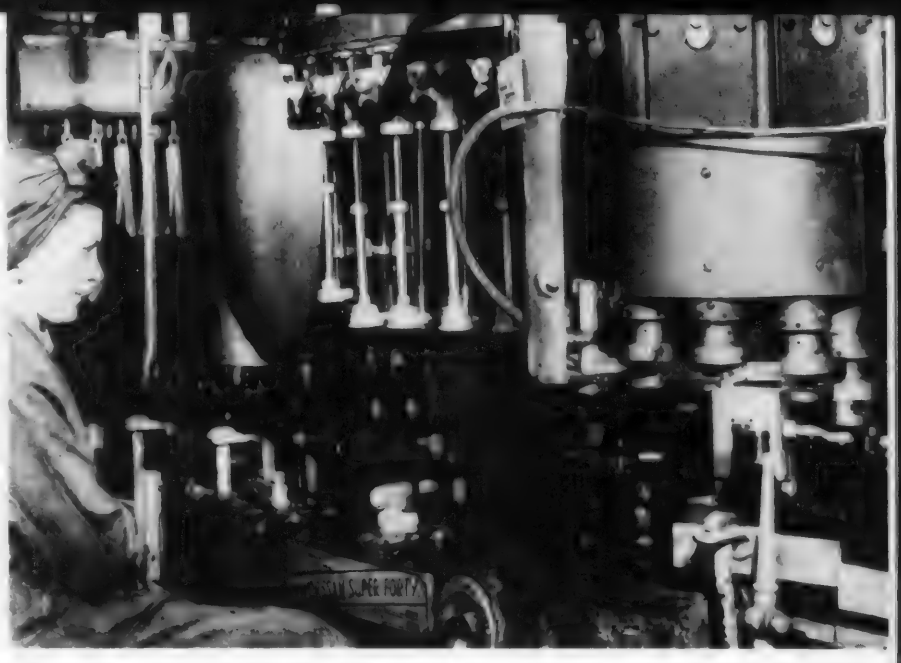
At the conclusion of the fermentation, the yeast (which has grown to four to six times its original quantity) is removed mechanically by suction or is allowed to skim off through funnels. This yeast is used to ferment succeeding brews, any surplus being dried and sold for cattle feeding, or the manufacture of yeast extract.

The wort has now become beer and, after allowing any surplus yeast to separate, is run to the brewery cellars. If destined to be sold as draught beer, it is "racked" into wooden or metal casks. When it is to be bottled, the beer is run into large glass-lined steel or stainless steel tanks. In either case, a secondary fermentation takes place before the beer is sent out to public houses in cask, or is filtered and bottled.

For export, ships' stores, and for use in clubs, the beer is filled into stainless steel drums of $5\frac{1}{2}$ gallons capacity.

The storage period in casks varies, some beers being sent out immediately after racking, others being kept in cask for a long time. Beer intended for bottling is conveyed to tanks in the bottling store.

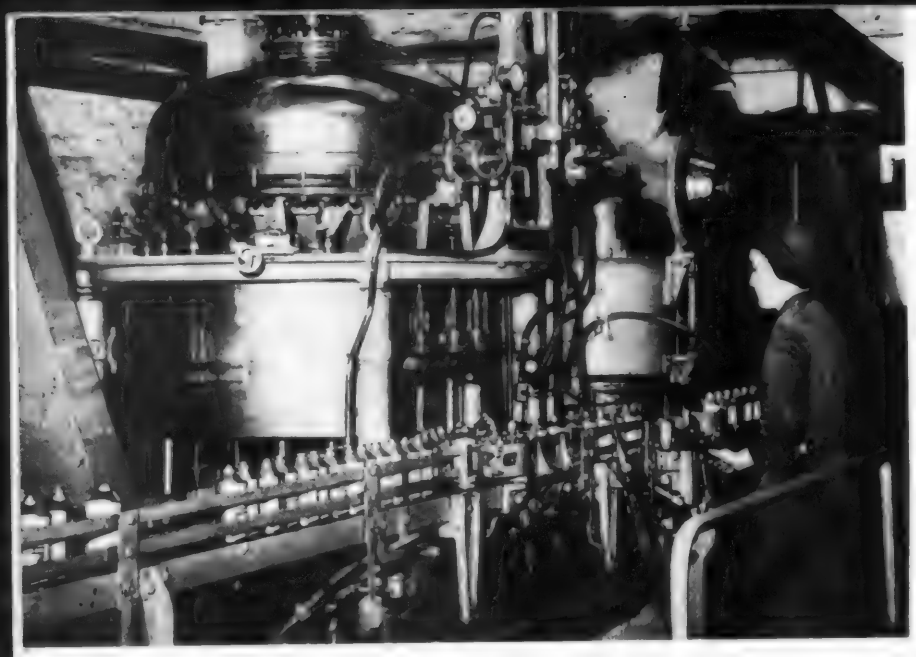
The bottle washing operation is an important one. Within the last two or three years the hydro type of bottle washing machines have been introduced, their use ensuring a high degree of sterility in the bottles. These automatically receive a pre-rinse with water, three

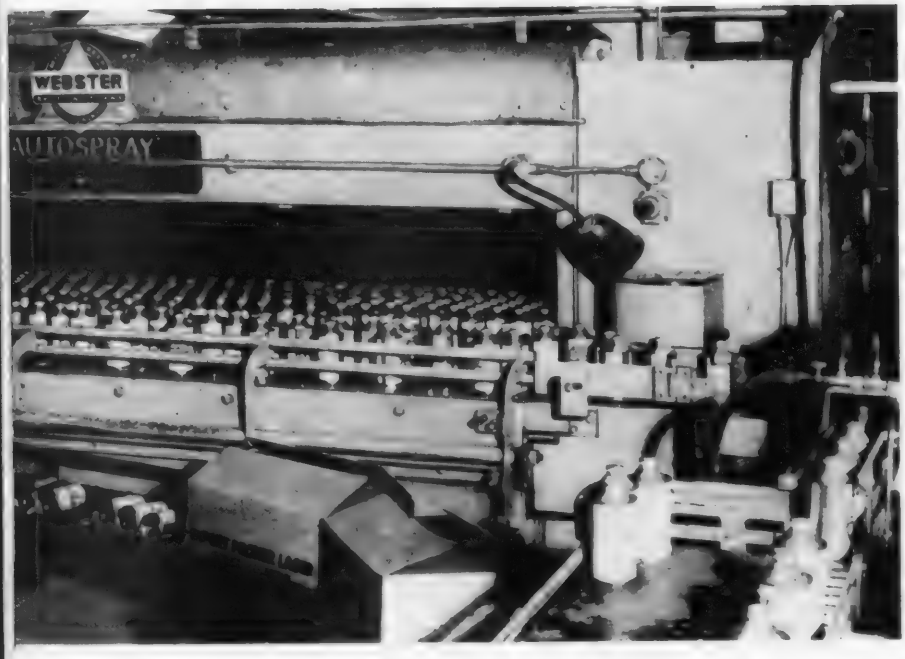


Above: **The filling and crowning unit comprises a 40-head filler and eight-head crowner combined on the same base with the driving gear box.**

Below left: **The stained glass windows in the lager brew house, depicting a broadcaster of barley corn, a brewer, and a hop picker, were designed and made by hand by Mr. Reginald Bell, whose work adorns many English cathedrals.**

Below right: **The wort runs from the mash tun in the lager brew house.**





detergent washes, the first at 135°F., the second at 145°F., and the last at 160°F., a warm water wash at 110°F. A final cold rinse concludes the washing operations.

After an ample draining period, the bottles are automatically discharged and delivered to the conveyor which feeds the filling machine.

Two-and-a-half Million Bottles

In the bottling department are eight units, consisting of automatic washer, filler, and labelling machine, each capable of handling some 7,200 bottles per hour, the total production amounting to over 2½ million bottles of beer per week. At each machine a line of washed bottles is examined individually, filling and crowning being effected at the rate of 120 bottles per minute.

The filling and crowning unit comprises a 40-head filler and eight-head crowner combined on the same base with the driving gear box. The filler operates on the balanced counterpressure principle with the filling level controlled by the head of water maintained in the separate counterpressure controller. Under this system, filling is exceedingly "quiet" with the most highly carbonated beers, while the levels in the bottles are kept uniform.

The bottles are fed into the machine on a slat conveyor from which they are transferred by a plough and a star wheel across the transfer table on to the tops of the bottle lifts around the periphery of the filler table. As the table rotates, each bottle is lifted up to the filling head by the air pressure in the lift, while the filling tube enters the bottle. The filling head passes a series of stops which rotate the valve and cause the bottle to receive a counterpressure of air and then the beer is turned on by opening the small pear-valve at the bottom of the filling tube. When the head comes round towards the crowner, the beer and air supplies

Above: **The lager beer can filling unit.**

Centre: **All canned beers destined for export are pasteurised by the immersion or spray method.**

Below: **Stacks of wooden casks and stainless steel drums in the brewery yard.**

are turned off by a further set of stops, the bottle lift being pulled down by a cam to the level of the transfer table.

The bottle is then transferred by a plough and star wheel from the lift on to the crowner table; it is automatically centred and crowned, and then passed on to the slat conveyor and taken to the labeller.

The filling and crowning unit is provided with ample safety devices to stop the machine in the event of a bottle becoming jammed in the transfer mechanism and is equipped with a "no bottle—no beer" device, besides the usual arrangements to prevent loss of beer or air if a bottle should burst while being filled.

The labelling machine, requiring the attendance of one girl operative, applies labels at the rate of six bottles at a time.

Lager Beer

The methods employed in lager brewing are fundamentally the same as for normal brewing, except for the fermentation, which is bottom fermentation instead of top fermentation. It involves the employment of a pure yeast culture and its maintenance in an uncontaminated state. A complicated apparatus is used in which the growth of the culture propagated from a single cell in a sterile nutrient medium is effectively protected against outside infection.

The pitching and fermentation take place at a low temperature, the yeast formed in the fermenting wort remaining at the bottom of the fermenting tun. After 14 days, the primary fermentation of the yeast being complete, the beer is stored in tanks in a cold cellar for three to six months or more, according to the class of beer being produced.

In addition to bottling lager beer, the company also cans it for export. All canned beers destined for export are pasteurised by the immersion or spray method. Pasteurisation is effected by the submission of the cans to a temperature rising to 140°F. in 20 minutes, holding at that temperature for another 20 minutes, and allowing 20 minutes for cooling.

The two Autospray pasteurisers installed in the brewery are of the moving platform type. The duration of treatment is automatically controlled by means of the adjustable superheat section which enables the thermal head to be controlled and cuts out the heating lag on the temperature graph.

The Hop Store

In the hop store huge stocks are held at a low temperature. English hops are used for British type beers, while the Saaz hops from Czechoslovakia are used for lagers. On the Czech farms no male plants are allowed, the presence of seeds when male and female hops are mixed giving a bitterness to the brew. The selection and handling of hops in general is an art in itself.

Cask Washing

Outside the buildings, cask washing is carried out by machines each fitted with eight nozzles. The majority of the casks used by the brewery are made on the premises; although the coopers' craft is fast dying out, there are still apprentices learning it. The end of their apprenticeship is celebrated by the age-old ceremony of tumbling an empty cask with a boy inside.

Brewing Research

The research laboratories, formally opened in 1946 by the chairman of the company, occupy a four-storey building, one floor of which contains the microbiological laboratory and a culture media room. The first floor houses the library and offices, with two chemical laboratories and a balance room and stores on the ground floor. The director of the laboratories, Mr. H. J. Bunker, M.A., is well known as a microbiologist. Research on every phase of brewing is carried out, including the testing of brewing methods, factors affecting biological and non-biological stability, properties of germicides and detergents, the characters of various yeasts, both cultivated and "wild," the utilisation of by-products, and a host of other problems of both long and short term character.

A cooper assembles a cask.

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Staff Welfare

The medical unit works in collaboration with Guy's Hospital, from whom instructions are received concerning the continuation of treatment for patients who have been able to return to work.

Canteen meals are provided at low charges and a thriving Social Club runs dances, concerts, and dramatic performances. A fine sports ground is maintained for football, cricket, and lawn tennis.

Export Trade

By 1939, between 30 and 40 per cent. of the company's export trade was in cans, but by 1941 shipping losses resulted in a complete cessation of normal export. Even so, the company's overseas trade was by no means lost. Export brewers were called on to produce as much beer as possible for the Merchant Navy and Services overseas. By the end of 1945, 39,128,024 cans of beer had been supplied to the Royal Navy, Merchant Marine, and H.M. Forces overseas.

When the Services' demand diminished in 1946, small quantities of export beer became available for normal overseas markets. Today, the export trade of the company can once more be said to extend to all quarters of the globe.

SUPPLIERS OF EQUIPMENT

Mills: *Robert Boby Ltd.*
Mash tuns: *Robert Morton and Co.; Zieman.*
Boiling coppers: *R. Ramsden and Son.*
Fermenting vessels: *Robert Morton and Co.; G. J. Worssam and Son; Carty and Son.*
Filters: *British Filters; John C. Carlson.*
Bottle washers: *Dawson Bros.; G. Hopkins and Sons; Michael Yundt, U.S.A.*
Bottle fillers: *G. J. Worssam and Son; H. Pontifex and Sons.*
Bottle labelling: *Matthew Wylie and Co.; Morgan Fairest.*
Yeast culture plant: *A. Jorgensen.*
Coolers: *A.P.V. Co.*
Can fillers: *Pontifex.*
Pasteurising plant: *R. W. Webster and Co.; Barry Wehmiller Machinery Co.*
Cask washers: *G. Hopkins and Sons.*
Refrigeration: *J. and E. Hall.*
Storage tanks: *Enamelled Metal Products.*

The Baking Industry

As the result of a misprint, the reference Horris and Walster on page 15, column 3 of the January issue of FOOD MANUFACTURE should read Harris and Walster.

Fruit Research

THE latest Long Ashton Report records the establishment of a separate Agricultural Research Council Unit for the investigation of the effects of micronutrients in plant nutrition. This unit, with Prof. T. Wallace as its Honorary Director, continues to be housed at Long Ashton, and its contributions to the Report are printed as a special section.

Continuing his studies on the control of fermentation in cider, L. F. Burroughs gives the evidence for attributing the stability of naturally sweet, centrifuged ciders to their yeast-inhibiting deficiency of nitrogen and aneurin. In the first of two papers on the use of selected yeasts in cider making, F. W. Beech shows that added selected yeasts could be recovered from cider only if the natural yeast flora had first been suppressed, *e.g.* by sulphur dioxide. Such pre-treatments caused changes in fermentation and flavour outweighing those induced by the selected yeasts.

In another paper, J. D. Phillips, using chromatographic methods, records the changes in the organic acid composition of the treated ciders. J. G. Carr describes the isolation from cider and characteristics of two organisms responsible for the breakdown of malic acid to lactic acid.

C. F. Timberlake and A. Pollard report on metallic contamination found on apples and in their products after a late lead arsenate spray.

In the field of domestic food preservation, B. A. Crang and M. Sturdy continued their comparisons of preservation methods on 27 varieties of fruit. They found that fruit preserved by freezing was generally better in colour than bottled fruit, but the flavour was superior only in certain varieties. In comparisons made on vegetable varieties, frozen products were usually superior to canned in both appearance and flavour.

Greetings Acknowledgments

FOOD MANUFACTURE acknowledges with thanks cards, calendars, diaries, and gifts received from the following up to the time of going to Press: Advanx Tyre and Rubber Co. (Sydney, Australia); American Society of Bakery Engineers; Dr. A. J. Amos; A.P.V.; J. Valentine Backes; George Berridge and Co.; Billing and Sons; Block and Anderson; Fredk. Boehm; Boxfoldia; C. E. B. Brett; British Baking Industries Research Association; Thos. Broadbent of Huddersfield; Brook Motors; A. P. Buchanan; L. V. Burton (U.S.A.); W. J. Bush and Co.; Carr's Biscuits; H. Cheftel (France); Clover Meats; Joseph Crosfield and Sons; Basil de Guerin; E. B. Dewberry; Eburite Corrugated Containers; Elah, La Casa delle Caramelle e dei Toffees (Genoa); George Ellison; Farmer's Marketing and Supply Co.; High Duty Alloys; Howards of Ilford; Industrial Waste Eliminators; Industrias de Alimentaçâo Idal (Portugal); Dr. D. W. Kent-Jones; E. F. Leak and Co.; F. J. Lyons and Staff; Mather and Platt; May and Baker; Mono Pumps; Murray-Watson; Oppenheimer Casing Co.; Pearlite Box Co.; Peerless and Ericsson; Picture Post Library; Practical Etching Service; Pyrene Co.; Russell Constructions; Verity Press Features; R. Harold Morgan; British Food Fair; Monsanto Chemicals; Dried Milk Products; Glaxo Laboratories; D. P. Battery Co.; J. A. Radley; Lintas Information Services; Ch. Goldrei, Foucard and Son; Brown and Polson; John Dickinson and Co.; Lacey Hulbert; Comm. Dr. Ing. Franco Emanuele (Italy); International Harvester Co.; Bakelite; Benjamin Electric; G. Coppa-Zuccari (Italy); Comité de la Foire de Paris (France); Brand and Co.

TO AUTHORS

The publishers of FOOD MANUFACTURE and the other journals of the Leonard Hill Technical Group are prepared to consider the publication of articles and text-books on their various subjects.

The Milling Industry

Progress in 1953

A. J. Amos, Ph.D., B.Sc., F.R.I.C.

Part 1

The year under review is a memorable one for the milling industry because on September 1, 1953, it shed the fetters of control and faced once again the freedom which it had last known 14 years ago—the freedom of an open wheat market, of non-directed formulation of wheat blends, and of the unrestricted production of divides. The year will stand out in the annals of the industry also because it saw the introduction of obligatory fortification of flour with a mixture of nutrients. These changes brought their difficulties and troubles, but millers attacked them with keenness and in that collaborative spirit characteristic of the industry and soon settled down to the new order.

THE bulk of the imported wheat was again Canadian, a situation that is normal because the strong Manitoban wheats have for many years constituted the backbone of the British millers' grists. Whereas in 1952 over 90 per cent. of the imports of Manitoban wheats were grades No. 3 and No. 4, these two grades accounted for only 40 per cent. of the 1953 arrivals of Manitoban. Fully as great a proportion of the total was represented by No. 2 grade wheat, while this grade and the top grade together accounted for almost 60 per cent. of the total. The improvement in the wheat situation resulting from the changeover from grades 3 and 4 to grades 1 and 2 for more than half the total imports of Manitoban was enhanced by the over-riding preponderance of Atlantic type wheats.

The Vancouver wheats are inferior in baking quality to the Atlantic wheats of the same grade—on some occasions very much inferior—and it was gratifying to find that in 1953, unlike the situation in 1952, only a very small proportion of Vancouver wheats was received.

Characteristics of Canadian Wheats

In Table I are given the mean values for various characteristics of the Manitoban wheats imported in 1953, these figures being calculated from the analyses made in the author's laboratories on all arrivals. The figures which appear in parentheses are those obtained by analysing Export Standards for the crop kindly supplied by the Board of Grain Commissioners in Winnipeg at the end of 1952, and it will be observed that the data for the cargoes which were subsequently received are very close to those provided by the advance samples.

The figures reveal that the first four grades of the 1953 Manitoban wheats were very similar in protein content and protein quality, although they differed in bushel weight and hence in flour yield, factors of particular importance when the extraction is as high as 80 per cent.

Garnet from Canada

Cargoes of Garnet were also received from Canada and their mean data were: protein 10·70 per cent.; maltose figure 2·00; stability 107; strength 49. The stability figure was as high as that of top grade Manitoban but the strength figure was below that of even the No. 5 grade Manitoban, indicating that the protein of the Garnet was stiff and lacking in stretching power. In addition, this wheat was distinctly inferior to the Manitobans in protein content. This was a wheat which had only a limited use in a grist unless there was available a wheat which had a protein of low stability and marked distensibility which could be used as a compensating component of the blend.

Wheat for Semolina

Amber Durum wheat was also imported from Canada. This wheat gives the best type of semolina for macaroni manufacture but it is also used as a component of the bread grist. It can be used only in small proportions because the balance of the physical characteristics of the protein is not unlike that found in Garnet, *i.e.* the protein is stiff and lacking in stretching power. It is weaker than Garnet and needs the support of stronger wheats in a bread grist but its protein content is in the Manitoban range.

Filler Wheats

The American Hard Winters, cargoes of which arrived during 1953, are "filler" wheats, that is, wheats which do not need the support of strong wheats in the bread grist but, on the other hand, will not "carry" any weaker wheat. The mean data of the 1953 arrivals were typical of this type of wheat,

TABLE I

MEAN DATA FOR IMPORTATION OF MANITOBAN WHEAT DURING 1953

Grade of Wheat	*Protein Content per cent.*	*Maltose Figure*	*Stability*	*Strength*
No. 1 Atlantic	12·66 (12·54)	1·80 (1·70)	103 (100)	68 (65)
No. 2 Atlantic	12·35 (12·54)	1·70 (1·70)	98 (100)	63 (62)
No. 3 Atlantic	12·47 (12·65)	1·80 (1·95)	103 (100)	64 (60)
No. 4 Atlantic	12·70 (12·54)	1·80 (1·95)	109 (105)	65 (63)
No. 5 Atlantic	12·22 (12·54)	1·95 (1·85)	114 (105)	53 (57)

although they showed slightly less strength than that possessed by the previous year's arrivals. The mean data were: protein 11·47 per cent.; maltose figure 1·58; stability 74; strength 41.

Weak Wheat Imports

Importations of weak wheat were mainly represented by Australian. This wheat is commonly used as an ingredient of the bread grist but it is particularly useful in blends intended for the production of confectionery and household flours. It is a wheat which exhibits a rather wide range of strength and protein content, but the mean data for 1953 were not very different from those relating to the previous year's cargoes. The mean data for the 1953 samples were: protein 9·88 per cent.; maltose figure 1·62; stability 77; strength 32.

Soft American Wheats

Cargoes of three types of soft weak wheat arrived from America during the year. These were Soft White, Western White, and Red Winter. These wheats were suitable for inclusion among the weak wheats of a bread grist, but they would have been useful components of grists intended for the production of non-bread flour. The Soft White and Western White were very similar in analytical data and could have replaced one another in a grist. The Red Winter, although rather stronger, was still a weak wheat and similar to Australian in strength. Mean data for the 1953 arrivals of these wheats are given in Table II.

Plate and European Wheats

At the close of 1953 some cargoes of Plate wheat arrived which were variously described as "Barusso," "Rosafe," and "Argentine." They showed a wide range of strength; some were like a normal Rosafe of previous seasons with a strength figure of about 40, whereas the Barusso gave a strength figure of about 80, a figure well above that for contemporary Manitoban. Similarly strong Barusso wheats were met with on the pre-war markets. The protein contents of the few Plate wheats seen in 1953 were in the region of 12 per cent.

TABLE III

DATA OF SOME EUROPEAN WHEATS IMPORTED DURING 1953

	Protein Content per cent.	*Maltose Figure*	*Stability*	*Strength*
Bulgarian	9·86	1·55	57	31
Danish	8·72	1·45	69	27
Swedish	9·98	1·50	98	52
Syrian	13·60	1·90	166	44
Turkish	10·83	1·50	65	40
Greek	8·95	1·30	44	13

European Wheats

Following decontrol, European wheats began to appear on the market and although the amounts available were small, considerable interest was taken in some of them because, after an absence of 14 years, they represented unknown quantities. The condition of the wheat was not always entirely satisfactory, some Turkish wheat, for example, containing 5 per cent. of foreign seeds. Typical data of some of these wheats are given in Table III.

Toward the end of 1953 some arrivals of Manitoban wheat were contaminated with ergot. It is only rarely that this fungus is found in Manitoban wheat and fortunately the contamination was slight.

Russian Wheats

Some samples of Russian wheat imported during 1953 showed grains which had been attacked by the wheat bug. This insect punctures the grain and injects into it a highly proteolytic secretion, and the presence of a few per cent. of such damaged grains in a grist can ruin the flour for bread-making purposes. Fortunately, the extent of the damage in the few 1953 wheats which had been attacked by this insect was not pronounced and the use of these wheats in normal proportions did not cause difficulties in the bakery.

Home-grown Wheat

English wheats cover a wide range of strength and of protein content, these factors being influenced by the variety and the district in which the wheat is grown. The weaker samples may contain little more than 7 per cent. of protein and give strength figures no greater than 10, while at the other end of the scale there are samples containing over 12 per cent. of protein with strength figures of 50. Both types are suitable for use in a confectionery or self-raising flour grist but the stronger and more proteinous samples are not suitable for biscuit work. Good biscuit flours have no more, and often less, than 9 per cent. protein and have strength figures no greater than 20. Harvest conditions were good in 1953 and no trouble was experienced from sprouted wheat and the consequent high maltose figures.

The 1953 crop of wheat grown in Ireland continued the good standard of strength which Irish wheat has exhibited for the last few years. At one time Irish wheat was very weak and usually much inferior to average English, but a few years ago stronger varieties were introduced since when the wheat has in the main been stronger and often more proteinous than English wheat. A common strength figure for samples of Irish wheat is 35.

Wheat Grists

Until control of the industry ended in September, the wheat grists for bread flour continued to be prescribed by the Cereals Divi-

TABLE II

MEAN DATA OF 1953 ARRIVALS OF SOFT AMERICAN WHEAT

	Protein Content per cent.	*Maltose Figure*	*Stability*	*Strength*
Soft White	9·03	1·50	47	21
Western White	8·66	1·40	43	18
Red Winter	10·20	1·60	59	34

sion of the Ministry of Food. The usual plan was followed whereby a maximum was set for the proportion of Manitoban wheat in the grist and a minimum figure for the home-grown wheat. In addition, a maximum figure was set for Australian, although usually there was no limit on the proportion of Australian that could be employed in non-breadmaking grists.

The fluctuations in the official grist, which were dictated by the supply position, were normal but sufficient to cause perceptible changes in the strength of bread flour. Early in the year up to 62½ per cent. of Manitoban and only 15 per cent. of English were permitted, whereas later on the maximum for Manitoban was reduced to 50 per cent. and the minimum for English raised to 20 per cent. The permitted maximum for Australian varied throughout the eight months of control from 5 to 15 per cent.

When the industry emerged from control, millers were free to choose their own grists for bread flour and since personal preferences and the question of economics then came into the picture, the grists adopted by different mills varied considerably in composition.

Additions to Flour

During 1953, millers were still required to incorporate a proportion of imported flour into their National flour. The amount to be added was not the same throughout the year but was of the order of 10 per cent.

The incorporation of *creta praeparata* in flour also remained obligatory, the rate of addition continuing at 14 oz. per sack. This fortification with calcium is not intended to counteract the phytic acid content of 80 per cent. flour, but the practice has been maintained as a means of enhancing the calcium content of the National diet. The practice did not stop when control ended, so that although millers were then able to choose their own grists and to mill to whatever extraction they preferred, they were still required to fortify their flours with *creta*.

There was only one exception and strangely enough that was wholemeal—the type of flour containing the highest and an inimical amount of phytic acid. The reason was that there are a very few bread eaters who agitate for true wholemeal free from any additions and it was decided that these people should be regarded as conscientious objectors and their principles treated sympathetically. This attitude has led to the apparently absurd situation where the highest grade patent flours, which are free from phytic acid, contain nearly 1 lb. of added *creta*, while wholemeals with their high phytic acid contents are devoid of compensating calcium.

Another anomaly is the enforced inclusion of *creta* in self-raising flour, since the latter contains over 4 lb. of acid calcium phosphate in 280 lb. The reason adduced for this situation is that were the omission of *creta* from self-raising flour permitted it would cause administrative difficulties.

Control of Self-raising Flour

Unfortunately the presence of the *creta* is a serious handicap to the rapid routine control of formulation on the self-raising flour plant. It has been customary for the cereal chemist to check the correctness of the sodium bicarbonate addition to self-raising flour by determining the total carbon dioxide content, a determination that can be performed in about 10 minutes. This is no longer possible because the carbon dioxide of the *creta* is released in the test and since the distribution of *creta* is not uniform, the total carbon dioxide of a self-raising flour provides no check upon the amount of sodium bicarbonate present.

Where the plain flour used in the manufacture of the self-raising flour is available a determination of *creta* content can be made, but reliable conclusions could be drawn from such a test only if the distribution of the *creta* were the same in each small sub-sample taken for the tests. The public analyst, and often the consultant who is called upon to analyse self-raising flour, is precluded from using even this doubtful line of approach, because the original plain flour from which the self-raising flour was made is not available to him.

A Nutritive Standard for Flour

Towards the end of the war—in January, 1945—the Government appointed a Conference on the Post-war Loaf. In its report the Conference recommended that a nutritive standard should be adopted for flour but was unable to reach agreement because it could not be decided whether such nutritive standard should be attained by long extraction, or by fortifying lower extraction flour with synthetic vitamins. The nutritive standard which it recommended embraced three "token" nutrients, vitamin B_1, nicotinic acid, and iron, and represented the levels which these three nutrients might be expected to reach in 80 per cent. flour. These levels were:

	mg. 100 *g.*
Vitamin B_1	0·24
Nicotinic acid	1·60
Iron	1·65

The main recommendations of the Conference were implemented when the industry was freed from control in September of last year. From that date all flour had to reach the nutritive standard suggested by the Conference, and the controversy of long extraction *versus* added vitamins was settled by adopting both methods of attaining the standard. A miller was permitted to make 80 per cent. extraction flour, which is expected to meet the nutritive requirements naturally, and he could also make flour of lower extraction, in which event he was required to fortify it with synthetic vitamins and iron to an extent which raised the vitamin B_1, nicotinic acid, and iron contents to those expected in 80 per cent. flour.

This is a logical scheme which should meet the views of the adherents of both the long extraction school and of the low extraction plus synthetics faction. It ensures that all flour reaches a reasonable nutritional standard but at the same time permits consumers to have the bread of their choice. Those who prefer white bread are able to satisfy their preference and in doing so do not diminish their intake of the token nutrients.

(*To be continued*)

Starch and Starch Products

THE plan of Vol. II of a work, now in its third edition,* is slightly different from that of Vol. I; the bulk of the matter has been written by Mr. J. A. Radley, and only a few chapters by collaborators, *i.e.* "Corn Starch Manufacture" by R. W. Kerr; "The Production of Chemicals from Starch by Fermentation" by L. M. Christensen and L. A. Underkofler; "The Role of Starch in Bread Staling" by C. W. Bice and W. F. Geddes, and "Physical Methods of Characterising Starch" by C. C. Kesler and W. G. Bechtel, while C. Paine has compiled in a useful Appendix "Notes on the Significance of Patent References."

The main work is divided into three parts: Part I deals with the actual manufacture of starches and such products as are immediately obtainable from them chemically, including glucose, maltose, dextrins, modified starches; and such chemicals as lactic acid, glycerol, *n*-butyl alcohol, acetone, ethanol,2,3-butylene glycol, dihydroxy acetone, and gluconic and itaconic acids.

In chapter 1 the commercial production of the root starches is outlined and in chapter 2 that of the grain and sago starches are dealt with. The production of corn (maize) starch is made the subject of a more detailed treatment in chapter 3—a monograph in which the modern practice from grain to finished product is excellently surveyed.

Chapter 4 deals with the production of glucose and maltose and gives a moderately full account of the subject, which is especially valuable in relation to the various crystalline forms in which dextrose and its hydrate can be obtained.

Chapter 5 on the production of chemicals from starch by fermentative processes suffers from compression and the inclusion of some superficial material on such products as penicillin and other antibiotics and vitamin B_{12}, which although biochemically very important and interesting should not have been allowed to decrease the space given to the production of ethanol, butanol, and acetone to 17 pages.

Chapter 6 on dextrins, British gums, and chapter 7, which consists of a couple of pages on physically modified starches, constitute a good account of this difficult field considered from a strictly practical standpoint.

In Part II are described the industrial applications of starch and products containing it, particularly as adhesives, and in food, paper, and textiles. The long chapter on the role of starch in bread staling appears to the reviewer to be an interpolation and not to have a proper place in this volume. This section is completed by three chapters on the miscellaneous uses of starch (soap-filler, laundry, cosmetic, etc.); on the utilisation of the by-products of starch manufacture (gluten, germ-meal and oil, potato pulp, but no reference to corn-steep liquor appears here), and on the use of antiseptics and preservatives in starch products.

Part III deals with analytical procedures in the detection, estimation, and examination of starch and its products and is accompanied by an excellent set of plates showing micrographs of various starches under ordinary and polarised light.

In general this book is well documented, each chapter having its own bibliography, amounting in all to some two to three thousand references; this in itself a valuable feature and if some chapters seem a little inadequate there is plenty of reference material to supplement them.

The book is well printed and bound, and is provided with good author and subject indexes; it forms a useful companion to Vol. I, dealing with the more theoretical aspects of starch.—G. M. D.

* *Starch and its Derivatives.* Vol. II. By J. A. Radley, M.Sc., F.R.I.C., edited by E. Howard Tripp, Ph.D. Pp. 465+xi. Chapman and Hall. Price 65s.

Milk Treatment

A PROFUSELY illustrated monograph* on milk pasteurisation has just been published in the World Health Organisation: Monograph Series. This monograph, a joint FAO/WHO publication, contains a digest of the most up-to-date information on the various stages of milk pasteurisation, from the planning of a suitable pasteurisation plant to the drawing-up of legislation concerning the handling and treatment of milk.

The first essential in milk pasteurisation is a satisfactorily designed and well-equipped dairy building. The problems involved in determination of the site, choice of processing methods, planning the layout of the building, and selection of construction materials are fully discussed in the monograph.

The three most generally accepted methods of milk pasteurisation and the type of plant required for each are described. The operation of the plant is considered in detail, and standards for pre-pasteurisation and pasteurisation procedures are clearly defined.

Laboratory control at all stages is of paramount importance in the milk pasteurising process. The various tests involved in this control, the apparatus required, and other relevant subjects are treated in the monograph.

For milk pasteurisation to be of maximum benefit to the community, standards for the handling and treatment of processed milk must be established by law and official supervisory authorities and control laboratories set up. This subject is also discussed, and the principles which should be followed in drawing up such legislation are outlined.

* *Milk Pasteurisation. Planning, Plant, Operation, and Control.* By H. D. Kay, C.B.E., Ph.D., D.Sc., F.R.S., J. R. Cuttell, A.M.I.Mech.E., H. S. Hall, B.Sc., A. T. R. Mattick, B.Sc., Ph.D., and A. Rowlands, B.Sc., M.S. Pp. 204. W.H.O. Price 12s. 6d.

FUTURE ARTICLES

AMONG the articles to be published in forthcoming issues of FOOD MANUFACTURE are the following: A description of a wafer biscuit factory, "Some Dutch Microbiological Food Spoilage Problems," "The Passion Fruit," and "The Milling Industry," Part II.

International Standards for Canners

The Comité International Permanent de la Conserve held its 1953 meeting in Paris in November under the Presidency of M. Manaut, during which a wide range of subjects was discussed by the various Commissions. Canning machinery manufacturers were present for the first time as guests and it is hoped that in future, by the formation of a Machinery Committee, they will form a functional entity of their country's delegation and enable a general interchange of experiences and needs relevant to this particular branch of the canning industry.

EIGHTY-FOUR delegates representing the United Kingdom, Austria, Belgium, France, Germany, Holland, Italy, Morocco, Portugal, Spain, Sweden, Switzerland, and Tunis attended the 1953 meeting of the Comité International de la Conserve.

In addition, members from two international bodies, the Tin Research Institute and the Food and Agriculture Organisation, took an active part. In most instances the delegates from a country constituted a quorum with their particular country's backing. This, however, did not apply to Great Britain, whose delegation was composed of separate bodies, *i.e.* the Fruit and Vegetable Canners' Association, the Fruit and Vegetable Canning and Quick Freezing Research Association, the Food Manufacturers' Federation Inc., and The Metal Box Company Limited.

Standardisation Commission

The objective for some years has been the compilation of the shortest possible list of Open Top Cans commercially similar which member countries considered essential for solely international trade.

Owing to the advanced stage of the canning industry, the immense capital value of existing can making and processing plant, with the added complication of the duodecimal and metric systems of measurement, real standardisation, by which is implied interchangeability of components, is considered impracticable at this time, hence the term "commercially similar."

In due course, a preliminary list of 10 cans was compiled by C.I.P.C. and submitted to the B.S.I., the latter holding the position of Secretariat on this problem although directly responsible to the Headquarters of the International Standards Organisation at Geneva.

Unanimity not having been reached, the B.S.I. was requested by Geneva to explore the problem further and then report back to I.S.O. After further meetings of the B.S.I. and the C.I.P.C., it was evident that the attempt to compile a short list of international cans, based on marrying up diameters with capacities, was producing a mere catalogue of can sizes; in fact, the final number amounted to 79.

Accordingly, prior to this C.I.P.C. meeting in Paris it was suggested to the B.S.I. that as an interim measure diameters should be ignored and an effort made to produce a list based purely on commercially similar capacities. Member countries agreed to this as an interim measure, as it would at least safeguard the ultimate purchasers; work on that basis is now proceeding.

At this time the C.I.P.C. carries no authoritative International status, but it is known that these informal and frank discussions are of general interest, *e.g.* the acceptance by B.S.I. of its suggestions as to Can Standardisation.

Scientific Commission

The main subjects discussed by the Scientific Commission were: the bacteriology of canned hams and canned fish, preservatives, colouring matters, and methods of analysis.

The general principle governing methods of analysis was reaffirmed, *i.e.* that the standard methods of the A.O.A.C. should be accepted unless it had been proved that they were inaccurate or inadequate or for some special reason they did not apply to canned foods. It was pointed out that the A.O.A.C. method for tin was known to be unsuitable and a co-operative study was arranged between France, Sweden, and the U.K., using the latest method produced by Campden Research Station.

On the question of the bacteriology of semi-conserves of fish, there was considered a report by Miss Aschehoug of Norway on the application to fish of the Buttiaux method for the bacteriological examination of canned hams, and it was generally agreed that the use of this method was feasible, but that further study was needed in order to assess the results.

The question of bacteriological standards for canned foods was also discussed and it was agreed that it would be desirable for the C.I.P.C. to establish contact with the International Union of Microbiology, with a view to holding a symposium, to which would be invited all bacteriologists interested in this question.

It was also agreed that an attempt be made to arrange a meeting on nutritional questions immediately before or after the 1954 meeting of the C.I.P.C.

Final drafts of methods for the estimation of fat, chlorides, and reducing sugars submitted to the Committee were approved.

Further work is being done on methods for the estimation of dry residue and nitrogen; it was also agreed that it would be desirable to agree on a method for the estimation of tin and sulphur dioxide in canned foods.

Preservatives in Food

Following a discussion on the detection and estimation of preservatives, it was agreed that a preliminary report should be prepared for discussion at the next C.I.P.C. meeting.

A summary of the preservative regulations for foodstuffs in 27 countries had been prepared in loose leaf form and could be obtained from the C.I.P.C. by any-

one who was interested. It was felt that the success of this publication justified the Committee in proceeding with a similar collection of regulations regarding food colouring matters. Some preliminary work showed that internationally the regulations were chaotic, and it was thought that the present time might be opportune to obtain some sort of international agreement on the subject. It was agreed that some approaches in this direction should be made.

Tomato Commission

A draft standard for canned tomato purée was considered in detail and was approved, except for the proposal to allow a copper content of 100 p.p.m. In view of the attitude of the Ministry of Food, and of the comments of a number of British canners whose opinions had been sought, the U.K. delegate could not agree to so high a limit for the copper content, especially in first grade material. The chairman said he would approach the Ministry of Food through the F.M.F.

Vegetable Commission

At a meeting of the Vegetable Commission, a summary of the replies to the questionnaire on canned peas sent out during the year was circulated; unfortunately the summaries of the replies to the questionnaires on canned carrots and green beans were not available in time for the conference. In view of this position, the U.K. delegation insisted on another meeting being held some time in the New Year when the Commission could consider the summaries of all the replies. The object of these questionnaires is to discover whether there is sufficient common ground to enable the different countries to reach agreement on any basis for the formulation of international standards.

Fruit Commission

Owing to the illness of the chairman, M. Materne of Belgium, no meeting of the Fruit Commission could be held. It was decided to call a meeting to coincide with that of the Vegetable Commission in the New Year to consider standards for syrup strengths and weights. The C.I.P.C. work on Fruit and Vegetable Standards for international trading should be helpful to our own discussions on British Standards and Codes of Practice.

On the invitation of Sweden, the 1954 annual meeting is planned for September in Gothenburg.

The 3rd International Congress on Canned Foods, to take place in 1956, is likely to be held in Rome on the invitation of the Italian delegate, when papers will be presented not only by C.I.P.C. member countries but also by others outside the present membership of that organisation. Such papers will be concerned with the bacteriology of canned foods, nutritional aspects and analytical methods, legislation, propaganda, the latest developments in connexion with tinplate, can manufacture, and canning techniques.

Cocoa Production

A FURTHER book* in the series of monographs on the chemistry, physiology, and technology of foods and food products, produced under the general editorship of Mr. Z. I. Kertesz, has now been published. It deals with the cultivation, processing, and analysis of cocoa and is from the pen of Miss Eileen M. Chatt, a member of the staff of the British Food Manufacturing Industries Research Association.

The book is ambitious inasmuch as in the space of 302 pages the author attempts to cover all aspects of cocoa production from the planting of the tree to the manufacture of the finished product, including a historical survey, a description and discussion of the botany of the tree, its cultivation, the pests and diseases which attack it, the chemical changes which occur in the maturing fruit, the manufacture of chocolate liquor, the manufacture of cocoa powder, cocoa butter, and chocolate, the nutritional value of cocoa products, methods of analysis, and a survey of the various cocoa producing countries and of the present position of, and outlook for, the industry.

Let it be said at once that the author has acquitted herself with conspicuous ability and success. The reviewer knows of no book dealing with a tropical crop which covers so much ground in so short a space with such completeness.

On the cultivation side, the various aspects are discussed with admirable conciseness, while the documentation is very full and complete. The only regret is that, presumably on account of the time factor, it was not found possible to include any account of the outstanding recent work of Evans at the Imperial College of Tropical Agriculture on propagation methods and minor element deficiencies.

The numerous maladies to which the cocoa tree is subject are adequately dealt with, although in discussing swollen shoot insufficient stress is laid on the very numerous strains of the virus that have been isolated; although mention is made of the systemic insecticide treatment with Hannane, it is not indicated that this insecticide has been found to have an objectionable influence on the taste and flavour of the ultimate product.

In the review of the possibilities of developing cocoa cultivation in other parts of the world in Chapter XII, it is unfortunate that no mention could be made of the extensive tours of Urquhart on behalf of the South Pacific commission and his conclusions regarding the possibilities in that part of the world. It is also noteworthy that in the general review of the world situation in the latter part of the same chapter no mention is made of Wickiser's notable assessment of the position in his book "Coffee, Tea and Cocoa."

These are, however, small matters and the author and the publishers are to be congratulated on a valuable contribution to the literature of a subject which is yearly growing in importance.—H. T.

* *Cocoa, Cultivation, Processing, Analysis.* By Eileen M. Chatt. Pp. 302 + xiv. Interscience. Price $8.50.

The Confectionery Industry

Progress in 1953

R. L. Kenny, B.Sc., F.R.I.C.

The year under review has been by far the most interesting of the post-war years because the greatest steps towards decontrol have been taken. Not only was rationing to the consumer abolished on February 4, but sugar and glucose, representing the prime raw materials to the producer, were also later derationed; while allowing more freedom of action, these steps introduced a greater element of competition.

IN earlier years, derationing of chocolate and sugar confectionery to the consumer had been attempted, but it had to be reimposed when it became obvious that consumption was riding at a very much higher level than the pre-war average, estimated at 7 oz. per head of the population. It was certain, therefore, that before derationing was again attempted, the Ministry of Food by a series of preliminary measures would ensure that no repetition of this fiasco was likely to occur. When derationing was re-introduced in 1953 the experiment was watched with a great deal of anxiety on all sides, because the step was taken without any increase in allocations of sugar to the manufacturer.

Before announcing decontrol, it was necessary to ensure that very large stocks of confectionery were built up as a buffer reserve to bridge the gap until such times as it might be possible for sugar to be derationed. In spite of this, as the scheme progressed, it became quite apparent that unless additional supplies of sugar were maintained from the Continent in the form of fondant, sweetened fat, and chocolate couverture, it would not be possible for manufacturers to meet the public demand.

Imports of Raw Materials

Import restrictions had already been imposed on the acquirement of such goods, licences only being issued on the basis of the quantity of raw material a manufacturer had purchased in a previously specified period. As these imports were on a drastically reduced basis, manufacturers doubted whether they would be in a position to maintain a free supply of goods unless the sugar allocations were increased, a step which the Ministry clearly indicated was not contemplated. In the light of events, it was found that the reserve of imported raw materials, built up prior to derationing, was adequate to enable derationing of confectionery to continue until such time as the Government were in a position completely to deration sugar, a step which was taken on September 30, 1953.

So close had both the industry and the Ministry worked together, that the stock of imported raw materials on that date was practically nil and the industry was able to switch rapidly to the utilisation of fine quality granulated sugar. As glucose was also made freely available at the same time, there is no doubt that the industry has now received the stimulus which has been so sadly lacking in the past and that there are high hopes for the future.

The price paid for sugar in the form of imported raw materials has been considerably higher than the basic Ministry price so that derationing would, all other factors being equal, have resulted in reduced raw material costs in the preparation of sugar confectionery. This has in fact occurred, providing yet again another example of freedom tending to reduce prices primarily on account of the elimination of premiums on the purchase of raw materials, and also because intense competition has again become a significant factor.

Cocoa and Chocolate

The reduction of prices did not apply to chocolate confectionery because it was only natural that the availability of more sugar should create a greater demand for cocoa beans, and as the output is limited by the ravages of swollen shoot, production was not able to keep pace with the demand. Consequently, the industry has seen a rise in the price of raw cocoa and cocoa butter, there being as yet no indication that a ceiling has been reached. The non-availability of the fine grade cocoas from the hard currency areas to the British manufacturer is forcing the industry to be mainly dependent on West Africa as a source of supply.

A new wrapper designed by Fuller's for their 4 oz., 2 oz., and 1 oz. tablet chocolate. The stripes are in red for milk and gold for plain. *Photo Fuller's*

Until now, the lattice pack has been used only for export, but is now available for the home market. It holds ¼ lb. of boiled sweets and is printed in three colours.
Photo Fuller's.

There is no doubt that the price differential between sugar confectionery and chocolate confectionery is tending to widen, with the result that more and more people are, for economic reasons, purchasing a larger proportion of sweets than hitherto.

Utilisation of Fancy Boxes

Considerable sales pressure, therefore, has been given to the utilisation of fancy boxes for the marketing of chocolates, mainly having a seasonal application. The demand for these during the Christmas period has been particularly heavy because it is the first Yuletide that it has been possible to make coupon free presentation gifts; the public generally have been quick to appreciate the potentialities.

While the public demand has been very great for all kinds of confectionery, statistics indicate that the overall demand for chocolate and sugar confectionery is approximately 8½ oz. per head of the population, proving that more sweets are being eaten than before the war. It is perhaps one of the interesting psychological aftermaths of rationing that many people who normally would not eat sweets were persuaded to do so when they felt that an entitlement was forthcoming; it is probably true to say that the habit has now become permanent.

Export

An incentive bonus has been in operation for hard currency export, based upon a bonus scheme whereby additional sugar was made available for the home market dependent upon dollar export performance. This scheme has worked very well in the past because it not only enabled a manufacturer to market greater supplies of confectionery on the home market, but it also enabled him to obtain this additional sugar at a non-premium price.

As a result there was a tendency for British manufacturers to undercut the price of confectionery offered abroad, and this resulted in the imposition in Canada of anti-dumping regulations, the basis of which attempted to ensure that no goods were exported below the fair price which the line was commanding on the home market when certain relevant factors were taken into account.

With the derationing of sugar this no longer provided the incentive, and it is certain that other schemes will have to be forthcoming to encourage the expansion of dollar markets. In the meantime, each manufacturer is having to review very closely his price schedules of overseas markets with a view to modification of former policy.

Nut Supplies

The more plentiful supply of nuts from non-dollar areas has helped to make confectionery far more interesting. Walnuts, brazils, almonds, and hazelnuts have been in good supply and this, together with the fact that dried fruit is now no longer controlled, has resulted in a great improvement in the actual flavour which can be imparted to confectionery by the introduction of these ingredients.

In addition, milk products in many forms have enabled the reintroduction of quality Caramels. Butter and other fats remain as the only materials likely to limit output.

Nuts represent to the manufacturer one of the finest possible ingredients for flavouring, but there are attendant problems, such as the likelihood of infestation for external presentation, and the risk of increased fat bloom when incorporated as ingredients in centre preparation. For these reasons, it is always imperative that high quality lines containing such ingredients should have a rapid turnover.

Maintenance of Quality

While the industry remains for the time being exempt from the general conditions of the Labelling Order, it has adopted certain recommendations which go some way towards ensuring uniformly high quality. For example, it has now been accepted as a principle that any sugar confectionery utilising the word "butter" in its description, should contain a minimum proportion of 4 per cent. butterfat calculated on the finished product.

While this has tended to limit output of well-known sweetmeats such as Buttered Brazils because

butter still remains a rationed commodity, there is no doubt that this regulation does protect the public from purchasing inferior quality merchandise. Steps are also being taken to discourage the use of the word "cream" in any article of confectionery such as caramels where real cream has not been utilised. While cream is now available for manufacturing purposes, its price today precludes its addition to any but the most expensive confectionery.

At some time in the future, it is likely that the full conditions of the Labelling Order will have to be absorbed by the industry, which will place the onus on the manufacturer of declaring, besides his name and address, the list of ingredients in his products in descending order according to the proportion present, and the net weight of the contents.

The design of the Meltis New Berry Fruits pack is printed in two colours—red and pastel green—for the home and export markets on a Pearlite box and wrapped and sealed in transparent cellulose. *Photo Richard Lonsdale-Hands Associates.*

Glucose

While the quality of sugar required by manufacturers for different purposes is now becoming a factor worthy of investigation, it is probably equally important that glucose should be considered in the same light on account of its more complex composition.

At the present time the K value, which is the analytical constant utilised as the yardstick for determining suitability for various operations, is obtained by determining the total reducing sugars and expressing this as dextrose. The K value, however, varies according to the ratio of dextrin, maltose, and dextrose, since the proportion can affect the viscosity of the glucose as well as its anti-graining properties. Obviously this ratio assumes great importance.

Glucose manufacturers are now prepared to make corn syrup for specific purposes, and each manufacturer will now have to find out by experience the most suitable for his purpose. Before the war a grade was developed in the United States of America with a very high K value and dextrose content. The viscosity was considerably lower, which made for easier handling, but it did not take on to the same extent in this country.

It will be interesting to see now the developments which take place in the preparation of glucose, because it has always been the contention of some British manufacturers that they were prepared to examine the possibility of making any grade of glucose provided the demand was sufficiently great, although in the past manufacturers tended to accept the standard product.

Other factors, such as discoloration at high boiling temperatures, have to be very carefully examined. This has at times been attributed to traces of soluble protein remaining in the glucose, but considerable progress has been made in this direction since grain was decontrolled.

Packaging Trends

Since the cessation of conditions of short supply of confectionery, a greater awareness of the necessity for adequate protection against humidity has become apparent, because as stocks develop on the retail shelves outside the control of the manufacturer, so must the shelf life of the article be increased.

Perhaps the most interesting advance has been made in the use of Polythene, which has a very much higher resistance to moisture penetration than the moistureproof transparent film, and has the additional advantage of being heat sealed by means of fusion. Moistureproof acetate film relies for its protective properties upon the addition of a coating and any creasing of the material does tend to lower the moisture resistance.

With Polythene, however, this is not the case, since the moisture resistance properties are entirely inherent in the base material. From both points of view, therefore, it would appear to have considerable advantages over the use of acetate film and considerable progress has been made in the utilisation of this material in the make-up of bags and liners for confectionery.

The disadvantage lies in the fact that Polythene is more expensive than the transparent acetate film and it is most important for any manufacturer to be quite sure that the added protection which he obtains is really necessary to justify the additional cost. Again, on account of the opacity of the material, it is less valuable from a presentation angle as against transparent film. Nevertheless, its use to date suggests that if suppliers can reduce the price of this material, it will have an interesting development in the industry.

Use of Waxed Paper

Waxed paper continues to be utilised for the wrapping of caramels, the great advantage resting in its cheapness compared with the above-mentioned materials. Creasing of waxed paper tends to reduce the resistance of moisture penetration, and before any manu-

facturer decides upon the type of material which it is best for him to utilise for wrapping his goods, it is most important that he should test the material in a manner which will indicate the moisture penetration of both creased and uncreased samples, because in carrying out many of the wrapping operations, the material can be subjected to certain twisting operations which can lower its efficiency.

A more recent development which appears to have a big future concerns the laminating of two base materials which have no inherent resistance to moisture penetration in themselves, but rely upon the properties of the bonding latex.

An example is that of Kraft base paper laminated to tissue, the resistance of which to moisture penetration is appreciable. It has a special advantage of offering an excellent printing surface; the coating applied ensures that the material possesses heat sealing properties.

In the field of lamination, foil laminated to waxed paper and also to tissue is widely used as a means of ensuring that the foil gives adequate protection. Unless this operation is carried out, pin hole defects in the foil itself permit infiltration of moisture. Lamination ensures complete protection in this direction.

Prepackaged Units

There has been a marked trend towards the prepackaging of confectionery as against supplies in bulk for loose sale. Two of the main distributing outlets existing for this type of packaging are the cinema and the kiosk where the time factor and conditions of sale do not permit weigh out operations.

A large section of the retail trade is interested in this development, because with the lower margins which appertain today, the practice of weighing out from bulk does lower the margin available to the retailer on account of the break-down loss incurred. On the other hand, there is a body of opinion in the retail trade which deprecates this trend, in so far as it is likely to represent a gradual movement away from the type of retail selling which caters for the specific needs of an individual and lends character to the business. Whatever may be the arguments for and against this type of packaging, there is no doubt that a greater volume of production is being turned through this channel.

Manufacturers are tending to concentrate on the production of small prepackaged moistureproof transparent film bags which have heat sealing properties and which are attractively printed by gravure processes. The heat sealing closure creates a problem in so far as once the bags have been opened by the customer, it is usually impossible to apply a satisfactory reclosure. On the other hand, all the sweets are usually individually wrapped in either waxed paper or printed film which offer adequate protection during the subsequent short shelf life.

Such a trend when applied to the packaging of larger units would offer additional problems and it is for this reason that tinplate and even glass jars are likely to remain as a means of packaging units greater than 5 lb.

Prepackaging in the United States

In the United States, prepackaged lines have almost become the order of the day on account of the establishment of super markets where the customer selects the goods which are required from various racks and pays only in bulk for the articles when leaving the store. In addition, most of the sales, even in the normal retail shops and stores, represent front counter service, the confectionery shop as we know it with rows of shelves behind the sales assistant hardly existing.

It is necessary carefully to relate the home demand to the type of retail selling outlet already in existence. Even in the U.K. there is likely to be a greater trend towards the self-service outlet in the very near future. Prepackaging places extra responsibility on the manufacturer, since it would be necessary for him to increase the number of machines which will handle small weighout units, but on the whole he is not likely to resist this trend should it become necessary.

The position relating to the supply of board and paper has been very critical and has made it necessary for marketing plans to be made considerably in advance. This tends to restrict initiative because with long delivery dates for second cost materials, it is necessary for buffer stocks to be maintained at levels higher than is desirable, for fluidity of merchandising ideas.

The future undoubtedly holds great possibilities for competition to influence a trend towards the preparation of seasonal packaging; this is bound to have an appreciable effect on presentation, with the result that confectioners' windows will look far more gay and attractive than has been the case in the past.

Advice on Fertilisers

SINCE its publication in 1943, a book* for those interested in farms and gardens has now reached its fourth edition. While no changes have been made to the essential character of the book, which provides comprehensive information on topics relating to the manuring of crops and garden plants, the authors have included new sections on trace elements and plant hormones, soil acidity, soil analyses, and soil conditioning, with a short analytical section containing descriptions of methods suitable for the determination of soil acidity and of the essential plant foods in fertilisers. Enclosed in an attractive dust cover in colour, the book constitutes a handy guide to a wide range of readers.

* *Manure and Fertiliser Notebook.* By J. S. Remington and W. Francis. Pp. 123+viii. Leonard Hill Ltd., 9, Eden Street, London, N.W.1. Price 12s. 6d.

The Leonard Hill Technical Group

Articles published in some of our associate journals in the Leonard Hill Technical Group this month include:

World Crops.—The Tropics as Sources of Vegetable Oils and Fats.

Chemical & Process Engineering.—Biochemical Engineering.

Manufacturing Chemist.—Emulsifiers.

Dairyman.—Pasteurised Milk by the Cummings Process.

American Flavours for Soft Drinks

James J. Broderick
Givaudan Flavors, Inc.

The British flavour chemist would probably feel himself to be at a disadvantage were he suddenly to be presented with the problem of making commercial flavours to suit the standards and tastes of the American soft drinks industry. The object of this article is to discuss the flavours used and to point out where the governmental regulations are the important consideration in the production of a flavour of a given type.

AT first sight, the reasons for the differences in the types and varieties of flavours used in America and other countries of the world would be in the inherent differences in taste and the availability and popularity of native fruits and herbs. Although these are important factors, perhaps the things that have created more basically different flavour bases in America are the many and varied governmental regulations. This factor more than any other makes it difficult for a flavour producer in another country to serve American markets with the right type of base. It also follows that bases created for that trade would have little appeal in markets where these governmental regulations do not apply.

Non-alcoholic beverages consume a very large percentage of the flavours produced in America and carbonated beverages are the largest flavour users in the beverage field. In the year 1950 the value of carbonated beverages sold in America was $876,532,600. In 1951 this figure amounted to $939,442,500, and in 1952 was about 15 per cent. higher than the previous year.

Preference for Natural Flavours

For the past decade there has been a decided trend towards natural flavours—the association of quality and inherent goodness with the word "natural" is the apparent attraction. Thus, today in the larger cities in the eastern half of the country it is difficult to find an imitation cherry or raspberry carbonated beverage. The bulk sales of the non-franchise bottlers are probably on their Black Cherry and Black Raspberry carbonated beverages labelled as "Real Fruit" or "Natural" and, in most cases, containing no artificial colour.

In the same category, although not as popular, are Grape and Strawberry. Grape beverages always have been artificially flavoured and coloured and the bulk still are, but the trend is definitely towards the natural product, and as superior flavours are developed, more and more of the grape beverages will probably be of the natural type.

True Fruit Extracts

Before the advent of the American Food Drug and Cosmetic Act in 1938, "true fruit extracts" were generally concentrated fruit juices to which were added small percentages of other extractives, essential oils, and synthetics to enhance the flavour and its strength as well as give distinctiveness to the product. Products of this type were sold as true fruits as this had become general trade practice.

Now, however, the Government has rejected this practice as being unlawful. In the discussions that followed between Government representatives and flavour manufacturers it was pointed out by the Government that the consumer had the right to expect to receive true fruit raspberry, for example, when a product is so labelled; for the flavour producers it was stated that, in most cases, concentrated fruit juices alone did not give a satisfactory completed flavour. The manufacturers also wanted the opportunity to make their products distinctive.

A compromise was effected whereby products called "True Fruits with Other Natural Flavours" were given official sanction. These are products in which 50 per cent. or more of the flavour comes from the named fruit and less than 50 per cent. of the total flavour comes from other natural sources. Products initially produced to adhere to these regulations were rather crude—raspberry consisting principally of concentrated raspberry juice, tincture of orris, violet leaves, and a little natural jasmine. "Strawberry with Other Natural Flavours" contained, besides the named fruit, some raspberry, tonka, vanilla, and Otto of Rose. Cherry was mainly cherry juice and cherry pit extractives reinforced with almond oil.

After several decades of working under these regulations, the ingenuity of the American flavour chemist has raised the quality of these products to a considerable extent. He has gradually learned which varieties of fruit and methods of extraction give the best results in products of this type and his quest for natural products with a particular flavour characteristic has enabled him to give fidelity and distinctiveness to them. Such products, giving high quality natural flavours at a reasonable price, are ideal for carbonated beverages, cordials, ice creams, soft centres for sweets, and syrups.

Raspberry Extract

In America a true raspberry extract, consisting entirely of concentrated raspberry juice and raspberry extractives, usually contains the extractive matter of at least 25 lb. of raspberries concentrated to one U.S. gallon and preserved with 14 to 18 per cent. ethyl alcohol. Such an extract, if properly processed from select fruit, could give an adequate flavour to a carbonated beverage if used at approximately 4·8 per cent. (vol.) in the syrup and 0·8

per cent. (vol.) in the finished drink. Since most raspberry with other natural flavours are recommended at approximately 3·2 per cent. (vol.) in the syrup and must give at least 0·4 per cent. (vol.) of raspberry extractives in the drink (to adhere to the stipulation that 50 per cent. of the flavour come from the named fruit), they must contain a minimum of 18¾ lb. of raspberry fruit per U.S. gallon. The remainder of the flavour comes from other natural sources.

At the present time Black Raspberry, Black Cherry, Strawberry Cream, and Concord Grape are the popular flavours in this category used in carbonated beverages. The trend is to extend this list, apple, blackberry, and pineapple being often mentioned as further possibilities in the natural or true fruit line.

Dislike of "Imitation" Products

The trend toward natural flavours is not limited to those of fruit. American producers dislike the use of the word "imitation" on their label. Where an imitation flavour such as "grape" is used, a coined name is very often given to the beverage to avoid labelling the product "imitation."

By ruling of governmental agencies, certain other flavours need not be labelled imitation even though they may be flavoured with synthetics. In this category are: Cream Soda, Cocoa Cream, Root Beer, Birch Beer, and Sarsaparilla. The ruling is based on the premise that these flavours have become known for what they are, and there is no attempt to dupe the public when a beverage flavoured with imitation vanilla is called Cream Soda or if synthetic methyl salicylate is used in Root Beer and Birch Beer beverages.

Citrus Beverage Bases

Citrus flavours for beverages are very popular in America.

The designation of Orange Beverage Base, for example, is the result of a ruling by the Food and Drug Administration and is based on the fact that although all the flavouring comes from fruit juice and natural essential oils, the product serves other functions in that it produces a cloud in the finished drink and gives it colour derived from certified coal tar colours. A drink made from such a base may be labelled simply "Orange Drink" or "Orange Beverage" because although the flavour comes from natural sources, its orange juice content is not predominant. On the other hand, to warrant the label Orangeade, the finished drink must contain up to 25 per cent. juice, depending on the State in which it is bottled and sold. The average is about 15 per cent. for orange.

Lemon-lime and Orange

Beside the cloudy-type orange, lemon-lime is very popular, as is lemon to some extent, as a mixer in the "Tom Collins." These bases are almost always in an emulsion form; their use at the rate of approximately 1·5 per cent. in the syrup and approximately 0·25 per cent. in the finished drink completely flavours and colours it, at the same time giving it a deep stable cloud.

An orange beverage base is a product containing orange oil blended with lemon and other natural oils for flavour. Five to 10 per cent. of the base consists of these oils with an approximate specific gravity of 0·85. These are blended with a "weighing" oil, a brominated vegetable oil, with a specific gravity of 1·24 to 1·33 so that the finished mixture has one of 1·01 to 1·03. The oils are then emulsified, using gum arabic and possibly other water-soluble emulsifying agents with water or fruit juice in which the certified orange colour has been dissolved. A specific gravity of 1·01 to 1·03 is chosen because the oil when dispersed in the finished beverage gives an insoluble cloud of the same specific gravity as the drink, thereby ensuring the stability of the cloud.

Ginger Ale

Although an American bottler may be willing to change his Orange Beverage if he feels he is offered a better flavoured or more stable base, or possibly add a new flavour if he feels it has appeal, the one flavour he is slow to change and generally feels is the foundation of his business is ginger ale. Most ginger ales can be considered washed (or terpeneless) extracts and contain ginger extract (from Jamaican, African, or Cochin ginger powder or oleoresin) and the citrus oils in various combinations. In addition, capsicum is often added for greater bite, while other essential oils are used to give a spicy or floral nuance.

Ginger ale is an all-the-year-round seller, while the citrus drinks are primarily hot weather ones. Bars use a great deal of ginger ale for mixed drinks, and it is used in substantial quantities in the home, especially during the holidays. Club Soda, which is carbonated mineral water (either natural or with added salts), is used in much the same manner as ginger ale. In the past year, Tonic Water, so popular in England, has had some success as a mixer in America, especially in the north-eastern section.

Popularity of "Clear Lemon"

Perhaps the most versatile flavour and the one that is enjoying increasing popularity is the so-called "clear lemon." This product is a washed or terpeneless extract made primarily from lemon but with a definite tang of lime, although it may contain small amounts of other oils. This flavour has been very popular as a thirst quencher because of its low sugar content and high acidity. It is becoming increasingly popular as a mixer, especially with the younger generation, and it is, therefore, an all-the-year-round drink, with or without added salts. It is economical for the bottler to use; the independent bottler as well as the franchise bottler is doing well with it.

Franchise Drinks and Bottlers

Kola drinks, on the other hand, are a very minor part of the independent bottlers' business but the biggest selling franchise drink. The flavour of American Kola is basically a lime-citrus one combined with a cinnamon-spice character and natural extractives of kola nut, coca, and vanilla. The presence of 0·7 grains of caffeine in each 6 oz. glass gives the drinks a definite "lift."

Franchise bottlers, *i.e.* those that operate under licence from some distributor, and receive flavour, bottles, labels, caps, and advertising, make up a considerable proportion of bottlers in America. The principal franchise distributors have one or perhaps two flavours but several have a complete line. The principal flavours sold by franchise bottlers are kola, orange, root beer, grape (imitation), and clear lemon.

In addition to those flavours mentioned, there are many others that are sold in small quantities or are popular in certain sections of the country. Coffee beverages are popular in the New England States, pineapple in the southern States, and certain other sections like grapefruit, a red coloured cream soda (vanilla), orange-pineapple, mint-ginger, and papaya.

Use of Synthetics

Although, as has been said, there is a growing trend towards natural flavours, a large percentage of the country (especially the south, middle west, and south-western sectors) still use a great deal of synthetics. On a country wide basis, grape is probably the largest seller, followed by cherry, raspberry, pineapple, and strawberry. In almost all cases some fruit extractives or juices are used, fidelity to the natural fruit being of prime importance. A higher percentage of lighter esters are probably found in imitation flavours for carbonated beverages than in other imitation bases owing to the fact that an initial burst of flavour in the cold drink is desirable and loss owing to heat effects is not a factor.

Sectional Preferences

Not only must the extract manufacturer know the American taste, but owing to the large areas involved and the racial origin of the people and climatic differences in different sections of the country, the sectional preferences must be considered. As in any other business, success is attained by the manufacturer who best understands his markets and produces accordingly.

The same flavours used for carbonated beverages, or slight adaptations of them, are used by manufacturers of syrups for fountain use, vending machines, or home consumption. Drink concentrates for domestic use to which the sugar and water are added are popular in some of the rural areas of the country and contain a greater percentage of imitation flavours than their counterpart in carbonated beverages.

Canned Carbonated Beverages

Recently carbonated beverages in cans have been introduced and should appeal to those sections of the country where bottled beverage distribution is poor. It is too early, however, to judge the success of this venture. The production of flavoured non-alcoholic drinks rises and falls with the temperature.

The production of carbonated beverages has grown over the years to a point where it is considered "big business." Every manufacturer of flavouring materials is either directly or indirectly concerned with the desires and success of carbonated beverage manufacturers. American flavour chemists and flavouring extract manufacturers are giving ever increasing attention to the requirements of these large users.

Fish Handling

INTENDED for the guidance of all those concerned with the handling of white fish on the fishing vessel, a recent D.S.I.R. leaflet* has again been revised and extended. It now takes into account the results of surveys and experiments carried out by members of the staff of Torry Research Station, Aberdeen, in the past few years, during normal fishing trips on commercial trawlers fishing distant grounds.

The action of digestive and other enzymes during staling is outlined, but sea-water bacteria, of types harmless to man, have been found to be the main cause of spoilage. They are present in very considerable numbers on the outer surfaces and in the intestinal contents of the freshly caught fish, but not in the flesh. At ordinary temperatures, these bacteria multiply rapidly and invade the flesh, producing substances responsible for the stale and later the putrid odours and flavours of spoiling and spoiled fish. The outer surfaces become covered with dirty coloured slime and lose their fresh "bloom."

The section on practical experiments at sea points out various defects in present trawler practice, and practical recommendations are concerned with temperature control, a higher standard of cleanliness, and more careful handling to avoid damage to the fish. Chilling by stowage in crushed ice is the most important single factor in keeping fish fresh. The need for gutting as completely and as soon as possible is also emphasised.

The last section gives detailed advice on the use of ice and refrigeration and on methods of stowage, and compares the results of observations on insulated and uninsulated vessels.

The three appendices which appeared in the second edition are again reproduced, the third, which has been extended, being a specimen short code of practice, and is available separately, free of charge, from the Torry Research Station, as Food Investigation Advisory Note No. 3.

* *The Care of the Trawler's Fish.* Pp. 14. Published by H.M.S.O. for D.S.I.R. Price 9d.

Elephants and Islands

BRINGING his list of sketches and essays to a round half-dozen, Mr. A. Ll. Matthison, in his latest book,* gives the mixture as before and very entertaining it is. His reminiscences cover the theatre, travel at home and abroad, old Morse craftsmen, literature, poetry, and the Victorian and Edwardian eras.

The miscellany is indicative of Mr. Matthison's turn of mind, his humour, the catholicity of his reading, and his outstanding interest in the world of drama. The pages of his book are enlivened by illustrations ranging from "a cuddle of Gaiety girls, Edwardian vintage," to some charming pictures of islands.

* *Elephants on the Stratford Road.* By A. Ll. Matthison. Pp. 123+viii. Cornish Bros. Price 8s. 6d.

A fisherman on the Lancashire coast prepares his shrimp nets.

Potted Shrimps

Leonard Walker

An investigation into the life history of the "pink" shrimp which was recently carried out in the Ministry of Agriculture and Fisheries' Nissen Hut Laboratory, at Burnham-on-Crouch, may point the way to the more productive fishing of better quality shrimps for processing.

TWO varieties of shrimp are caught in Britain: the "brown" shrimp, which has a short rostrum, known as the Common or Sand shrimp, and the "pink" shrimp, having a long rostrum with teeth dorsally and ventrally, known as Fleetwood prawn and Shank on the Lancashire coast, and as Red shrimp, Sea shrimp, and Aesop's prawn elsewhere. "Brown" shrimps in berry (carrying eggs) are to be found all the year round, although in smaller numbers during the autumn months. The "pink" has only one spawning season, from November to May. The presence of eggs does not affect the flavour of the meat.

Shrimping Grounds

One of the best shrimping grounds is The Wash, with its sandbanks and shallow waters. In 1951, 14,434 cwt. were landed at the ports of Boston, King's Lynn, and Fosdyke, representing an income of £46,368 to the 100 or so full and part-time fishermen operating in those waters. The majority of shrimps from these grounds are sent to Billingsgate for distribution, only a small percentage going to peelers and quick-freeze firms.

Catchings in the Thames Estuary in 1950 were extraordinarily small. From four to 20 gallons was the average result of a day's trawling, whereas in 1951 hauls of 80 to 200 gallons were not uncommon. Bad weather often prevents winter fishing in this area, but there are not many days when the shrimp boats cannot put out into The Wash, and so keep up the supply of fresh boiled shrimps.

A horse-drawn cart is used to draw the conical nets along the sea-bed.

Preparation of the Shrimps

It is probable that the tiresome task of removing heads, tails, eggs, legs, and overcoats from freshly boiled shrimps produces consumer-resistance against this delicacy, but those who are partial to them and do not possess the patience necessary for their preparation, can purchase them in the form of potted shrimps or paste.

Even when produced on a commercial scale, their preparation is slow and tedious, and those concerned are anxious to find a machine which will top, tail, and peel shrimps while leaving the texture and flavour of the meat unimpaired. Several machines have been invented, but these will perform only one or other of these functions.

Both the pink and brown shrimps are used in the manufacture of pastes, but for the more specialised potted shrimp industry only the brown variety is used. The pink shrimp has a rather tough and oily flesh, which does not reach the high standard of palatability demanded.

The wax cartons of shrimps are packed in cardboard boxes.

Harvesting the Shrimps

One of the oldest firms in the business, Young's Potted Shrimps, Ltd., operate their own fleet of shrimp boats along the west coast from Southport in Lancashire to Kirkcudbright in Scotland. Cart shanks (horse-drawn carts towing a conical net) are used on the Lancashire coast, where the slope of the sea-bed is gradual.

It is considered essential that the shrimps used in the product should be caught on a clean sand free from mud. These conditions exist on the west coast, whereas the silty sea-floor of The Wash tends to give the shrimps a dark appearance.

It is upon the men who operate the boats that the responsibility rests for the quality of the final product; among their functions are the sorting out of the suitable shrimps and the carrying out of the boiling process, effected in large coppers on board.

The outer shell of a properly boiled shrimp changes from green to bronze, and the tail curls neatly under towards the head. Considerable attention to correct cooking is necessary in order to avoid the production of straight, soft shrimps, unsuitable for processing.

The Peeling Operation

The firm's fisheries at Annan and Morecambe Bay receive the freshly caught shrimps and the peelers (or pickers, as they are called in Scotland) set to work. They sit on either side of a long table with the shrimps in a heap down the centre. Each operator has a shallow dish beside her, into which she places her output of about one-and-a-half pounds of peeled shrimps per hour. This represents the average, although in a recent competition held at the firm's Scottish fishery, one person picked two and a half pounds in 74 minutes, and another, two and a quarter pounds in 61 minutes. The amount peeled by each is weighed by a supervisor who passes the prepared shrimps on to the cook.

In view of the fact that the product is prepared by hand, stress is laid on the necessity for hygienic habits on the part of the operatives, and rules for these are prominently displayed in all parts of the factory.

The peeled shrimps are cooked in very hot butter, no preservatives being added. When the butter has solidified, it forms a base for the finished product. The molten mixture is ladled into screw-top wax cartons which, when the contents have set, are screwed up, wrapped in greaseproof paper and stacked in cardboard boxes ready for despatch to various centres.

Owing to the extremely perishable nature of the product, it is essential that distribution, sale, and consumption take place as quickly as possible after packing; to this end, consignments are sent by passenger train to the firm's London office for distribution, while individual cartons going to private addresses are sent by letter post in order to ensure speedy delivery.

Commonwealth Facts

THE second edition of a year book* which presents in one volume essential and up-to-date facts and figures concerning the British Empire and Commonwealth of Nations has recently been published. Information for each Dominion, Colony, Protectorate, Trusteeship Territory, and Protected States is given, together with comprehensive facts concerning such things as the location, history, constitution, area, population, chief towns and ports, currency, revenue, imports, exports, and industrial development.

A separate section deals with the production and trade of more than 90 commodities and another gives details of many official and unofficial bodies concerned with Commonwealth affairs and of many Government offices.

Manufacturers and exporters will find the book contains information of considerable value for their day-to-day needs.

* *The Empire and Commonwealth Year Book*, 1953-54. Compiled by Ronald S. Russell, M.A., M.P. 2nd Edition. Pp. 453+xxx. Newman Neame. Price 45s.

Gelatine and Glue Research

The output of research work from the British Gelatine and Glue Research Association, described by Mr. A. G. Ward, M.A., F.Inst.P., Director of Research, in the fifth annual report for the year October, 1952 to September, 1953, has shown a sharp increase in the past year, as a result of the application of techniques which were being studied in previous years. The investigations are beginning to throw new light on the structure of gelatin and they will gradually influence the whole outlook on problems both of manufacture and of use.

AN apparatus, based on the original work of Moore and Stein, for determining the complete amino acid composition of proteins, has been constructed. The amino acids contained in a protein hydrolysate are separated chromatographically on a column of sulphonated polystyrene resin, Dowex 50. Successive buffer solutions are passed down the column, eluting the amino acids in a definite order. The eluent leaving the column is collected as 1 ml. fractions by means of an automatic fraction collector and the concentration of amino acids in each fraction estimated colorimetrically by the ninhydrin reaction.

The method has been applied successfully to a typical gelatin and 99 per cent. of the nitrogen present has been accounted for by quantitative estimation of the amino acids present.

Chemical Composition of Compact Bone

In a study on the chemical composition of compact bone, the tissue selected was a powdered sample of compact bone from the central tubular portion of the femur of the cow, since it could be obtained almost entirely free of other tissues. The organic components of the tissue were collagen (18·64 per cent.), mucopolysaccharide (0·24 per cent.), and a protein which resisted solution in boiling water (1·02 per cent.). Free sugars were not detected, nor was fat present. Inorganic matter, with which citrate was included, made up to 70·91 per cent., and with water (8·18 per cent.) gave a total of 99·0 per cent. No significant chemical differences were observed between the bone collagen and hide or sinew collagens.

The mucopolysaccharide contained some 70 per cent. of a protein of amino acid composition markedly different from that of collagen. As determined by the Moore and Stein apparatus, no hydroxyproline was found to be present. The carbohydrate portion as a whole did not correspond to the published compositions for chondroitin or mucoitin sulphate. Glucos-2-amine, galactos-2-amine, glucuronic acid, galactose, and mannose were all detected in the carbohydrate, and they were estimated approximately. The resistant protein was shown to be neither collagen nor elastin, by the use of paper chromatography.

Titration Curve of Gelatin

A technique has been developed for securing reasonably accurate titration curves for gelatin in solution. These curves are of value for estimating the carboxyl, imidazole, and ε-amino groups on gelatin. In conjunction with the isoelectric point, they also enable the guanidino groups to be determined. The following limits of *p*H are suggested for use in interpreting curves for gelatin at 40°C.:

Carboxyl groups ..	*p*H 1·5 to 6·5
α-amino and imidazole groups	*p*H 6·5 to 8
ε-amino groups ..	*p*H 8·5 to 12·5

These limits differ from those selected by Cannan for the following reasons: (*a*) the *p*K of the ε-amino group is reduced at 40°C. as compared with 20-25°C.; (*b*) the presence of hydroxylysine will reduce the lower *p*H figure for ε-amino groups; (*c*) some proportion of the carboxyl groups have *p*K values in the region of *p*H 5. These will cease to exert buffering action only when the *p*H is above 6·5. Using these limits, good agreement has been obtained between figures for composition deduced from the titration curves and the analytical figures.

Amino End Group Determinations

The gelatin chain molecule is presumed to terminate at one end in an amino group ($-NH_2$) and at the other end in a carboxyl group (-COOH). The technique of F. Sanger has been applied to determine the number of the terminal amino groups in different gelatins and also the amino acids to which they are attached. The results are illustrated in the Table.

If the gelatine molecule is assumed to consist of a single chain, the number of residues would indicate an average molecular weight of 65,000. This is in good agreement with figures from physicochemical methods such as for osmotic pressure.

When a gelatin solution is degraded, the chain molecule is split into smaller parts, giving a fresh terminal amino group for each link broken. The end group technique has been applied to study degradation as a function of *p*H, time, and temperature. A mean activation energy of 19,000 cal. has been found for the bond breaking reaction.

Average No. of Residues for Gelatin of 100,000 Molecular Weight

Amino Acid Carrying Terminal Amino Group	*Hide (Alkali Processed)*	*Pigskin (Acid Processed)*
Glycine	0·83	0·74
Serine	0·19	0·10
Threonine	0·11	0·08
Alanine	0·11	0·24
Aspartic acid	0·11	0·13
Glutamic acid	0·10	0·07
Others	0·12	0·19
Total	1·57	1·55

The Properties of Gelatin Fractions

The physical properties (rigidity, viscosity, melting points) of the fractions from different gelatins and from bone glue have been determined.

The method developed for rigidity measurements involves the deformation by air pressure of a cylinder of gel previously set in a precision-bore tube. It is sufficiently simple to enable measurements to be made at two concentrations and four temperatures (0°C. to 25°C.) for fractions of six gelatins of widely differing types and for fractions of one bone glue. At 0°C. and 10°C. the rigidity of 5·5 per cent. gels of fractions of high grade gelatins depends only on the gelatin used and not on the fraction chosen. The rigidity is therefore independent of the molecular weight in these conditions. At lower concentrations, or higher temperatures, some effect of molecular weight becomes apparent.

For the bone glue studied, the rigidity apparently was not independent of molecular weight under any of the conditions of measurement, but it is clear, even in this instance, that the rigidity is not a unique function of molecular weight. The whole of this work is closely related to the problem of preparing gelatine and glue of predetermined properties.

The Chemical Modification of Gelatin

The first reaction studied, in an attempt to produce modified gelatins, has been methylation of their free carboxyl groups.

Methylation has been conducted by a slow reaction with methanol under acid conditions. Although almost complete methylation of carboxyl groups is achieved, a proportion of the esterified groups is very unstable, and readily loses methanol. The derivative appears stable to most conditions for up to 33 per cent. substitution, but is decomposed by alkalis. The degree of substitution was measured using a modified Zeisel method. The values obtained agreed with those obtained by application of the titration curve technique to methylated gelatin.

The methylated gelatin was not very different in behaviour from its parent gelatin, and gels were easily obtained. Methylation raises the isoelectric point so that there was marked similarity to the acid process gelatins.

Gelatin from Hide Materials

An extensive survey has been carried out of the variables involved in making gelatin from hide. Although the results have largely confirmed existing knowledge concerning the influence of lime pretreatment, *p*H of extraction, etc., the work provides a valuable background for future investigations.

Equipment has been set up to enable bone glue to be made on a scale using 1 cwt. of bones for each set of extractions.

Bacteriological Testing of Gelatin

A method has been worked out for determining total bacterial counts for gelatin. Wide variations of total count are known to occur for samples withdrawn from a single gelatin batch. This results from high local concentrations in individual grains. The expression of the results as a mean of five separate determinations, with limits of error, will assist in preventing needless disputes over disagreeing values.

Although certain lines of the fundamental research appear, in their early stages, rather remote from practice, the next few years will see these increasingly linked with the more practical investigations. These may then be planned and interpreted in the most fruitful manner.

Shrimp Bacteriology

RECENT studies conducted at the University of Texas by O. B. Williams consisted of determining the total number of bacteria on shrimp as captured, the kinds of bacteria present, and the significance of the various kinds as causes of deterioration (*Seafood Business*, **5**, 2, 16).

It was found that the bacteria were on the surface of the shrimp and in the intestinal tract, but not in the tissues. Since the same types were found to occur in the intestinal tract as on the surface, determinations of total counts were made by shaking selected shrimp with a measured quantity of water to wash off the bacteria and making cultures of the washings. There appeared to be no correlation between the size of the shrimp and bacterial counts.

The most important single factor affecting the total bacterial count on individual shrimp seemed to be the amount of washing they received before selection for examination. It was observed that most of the bacteria were carried on the head portion where mud was also found to be most abundant. It was thus established that sea mud, carried principally by the appendages of the head portions, was a major source of bacteria.

Sea water was not considered to be a source of bacteria since counts on sea water were quite low. Heading and thorough washing of the tails before icing were recommended as a means of reducing the bacterial load and thereby delaying quality loss. The kinds of bacteria carried by the shrimp were found to be the same as those found on other marine products.

In studies to determine the effect of different conditions of storage, shrimp immersed in ice in glass jars and shrimp under dry storage rapidly lost quality. Those held in ice and kept from contact with water from the melting of the ice, by means of a false bottom in the packer, were maintained in good commercial condition for at least 16 days, although storage for no more than 12 days was desirable.

The most suitable size of ice particle to be used for storage needs to be established. Flake ice is said to be unsatisfactory; snow ice may introduce problems owing to bridging and channelling. Contact of shrimp with melting ice is essential for maximum protection. Turning and re-icing at intervals may be worth while; in any case, it is important that shrimp be kept clear of the water that accumulates from the melting of the ice in which they are stored, since this water has been found to be rich in spoilage bacteria.

Ministry of Food

LATEST STATUTORY INSTRUMENTS

The list given below is the continuation of the list of Instruments published in "Food Manufacture," November 1, 1953, page 444.

No.	*Date. 1953.*	
		PRICE FIXATION
1409	Sept. 27.	Order amending the Meat (Prices) (Great Britain) Order, 1953.
1410	,, 27.	Order amending the Meat (Prices) (Northern Ireland) Order, 1953.
1436	Oct. 1.	Order amending the Milk (Great Britain) Order, 1953.
1513	,, 19.	Order amending the Butter Order, 1951. Revokes S.I. 1953, No. 1276.
1514	,, 19.	Order amending the Cheese Order, 1950. Revokes S.I. 1952, No. 1717.
1515	,, 18.	Order amending the Oils and Fats (No. 2) Order, 1953.
1519	,, 25.	The Seed Potatoes Order, 1953. Revokes S.I. 1952, Nos. 1782 and 2217.
1705	Nov. 29.	The Exports (Relaxation of Price Control) Order, 1953. Revokes S.R. and O. 1946, No. 660, and S.I. 1952, No. 748.
		ARTIFICIAL SWEETENERS
1311	Sept. 1.	The Artificial Sweeteners in Food Order, 1953.
		BACON AND HAM
1764	Dec. 6.	Order amending the Bacon Order, 1953. Revokes S.I. 1953, No. 1255.
		CONDENSED MILK
1609	Nov. 11.	Order amending the Public Health (Condensed Milk) Regulations, 1923.
1618	,, 16.	Order amending the Public Health (Condensed Milk) Regulations (Scotland), 1931.
1784	Dec. 9.	The Condensed Milk Order, 1953. Revokes S.I. 1951, No. 1009, and S.I. 1953, No. 1164.
		CONDITIONS OF SALE
1588	Nov. 5.	Order revoking the Food (Conditions of Sale) Order, 1940, and S.R. and O. 1942, No. 1125.
		GENERAL PROVISIONS
1422	Sept. 27.	Order amending the Food Rationing (General Provisions) Order, 1953.
		LICENSING
1423	Sept. 27.	Order amending the Food (Licensing of Wholesalers) Order, 1949.
1763	Dec. 6.	Order revoking the Food (Licensing of Wholesalers) Order, 1949, the Food (Licensing of Wholesalers) (Amendment) Order, 1950, the Food (Licensing of Wholesalers) (Amendment No. 2) Order, 1950, the Food (Licensing of Wholesalers) (Amendment) Order, 1952, and the Food (Licensing of Wholesalers) (Amendment) Order, 1953.
		POTATOES
1734	Dec. 6.	Order amending the Ware Potatoes Order, 1953.
		PRESERVATIVES
1610	Nov. 11.	Order amending the Public Health (Preservatives, etc. in Food) Regulations, 1925.
1627	,, 16.	Order amending the Public Health (Preservatives, etc. in Food) Regulations (Scotland), 1925.
1820	Dec. 16.	Order amending the Public Health (Preservatives, etc. in Food) Regulations, 1925. Revokes S.I. 1953, No. 1610.
		PRESERVES
1307	Sept. 1.	Order amending the Food Standards (Preserves) Order, 1953.
		RATIONING
1256	Aug. 16.	Order amending the Bacon (Rationing) Order, 1953. Revokes S.I. 1953, No. 915.
1538	Nov. 1.	Order amending the Fats and Cheese (Rationing) Order, 1953. Revokes S.I. 1953, Nos. 916 and 958.
1704	,, 29.	Order amending the Fats and Cheese (Rationing) Order, 1953.
1729	,, 29.	Order amending the Meat (Rationing) Order, 1953. Revokes S.I. 1953, Nos. 914 and 1247.
		SACCHARIN
1309	Sept. 1.	Order revoking the Saccharin Order, 1949.
1310	,, 1.	The Food Standards (Saccharin Tablets) Order, 1953.
		SALVAGE
1407	Sept. 27.	Order revoking the Salvaged Goods Order, 1948.
		SHIPS' STORES
1424	Sept. 27.	Order amending the Ships' Stores (No. 2) Order, 1950.
		SOFT DRINKS
1827	Dec. 20.	Order revoking the Soft Drinks Order, 1947, the Soft Drinks (Amendment) Order, 1948, and the Soft Drinks (Amendment) Order, 1951.
1828	,, 20.	The Food Standards (Soft Drinks) Order, 1953.
		STARCH AND DEXTRINE
1735	Dec. 6.	Order revoking the Starch and Dextrine (Control) Order, 1943.
		SYRUP AND TREACLE
1308	Sept. 6.	Order amending the Syrup and Treacle Order, 1950. Revokes S.I. 1952, No. 1103.
1421	,, 27.	Order revoking the Glucose Order, 1951, the Syrup and Treacle Order, 1950, and the Syrup and Treacle (Amendment) Order, 1953.

Abstracts from Recent Food Literature

Analytical Characteristics of Essential Oils from Sicilian Fruits. R. Sara (*Conserve e derivati agrumari*, 1953, **2**, 113).—Report on analytical research work carried out at the Fishery and Food Industry Research Centre, Palermo, on numerous groups of essential oils produced in Sicily. The work forms part of a methodical investigation into the changes which have taken place, in the course of time, in the standard properties of Sicilian food products under the influence of local changes in agricultural and production methods.

Colouring Matters in Foodstuffs. Keller (*Die Fleischwirtschaft*, 1953, **5**, 258).—A committee of German food, medical, and chemical experts set up in 1949 has issued a report which is intended as a basis for a proposed revision of outdated German legislation on the use of colouring matters for food products. Chief *raison-d'être* of the committee was the discovery, made in Japan before the war and confirmed by German research, that certain colouring matters used for foodstuffs are carcinogens. The committee suggest, *inter alia*, that the artificial colouring of certain basic foodstuffs should be prohibited and that the choice of colouring matter for other food products must be confined to an official list, containing only those substances which have been thoroughly tested for innocuousness. A provisional list of such substances comprises 26 different colouring matters, including some still subject to final approval, and some natural colouring matters (carotene, chlorophyll, lactoflavin).

Decrease of Vitamins in Tomato Products. (*Información Conservera*, 1953, **1**, 29).—Vitamins A and B from solid tomato pulp are not affected by the normal oxidation processes of tomato processing. Vitamin C, on the other hand, is greatly affected, and its protection is one of the most difficult problems of the tomato canning industry. If the juice is not heated but, on the other hand, well aired, the ascorbic acid is almost completely destroyed, probably because of the influence of oxygen and some ferments contained in the juice. This destruction can be largely avoided by preheating the fruit before the juice extraction, or else by subjecting the juice to vacuum treatment. According to Italian research results, tomato extracts kept in barrels lose more than half their vitamin C content within five months.

Aluminium as Packing Material for Food Products from Sicily. E. Hugony (*Conserve e derivati agrumari*, 1953, **1**, 107).—As it is necessary for Sicily to export the food products of the country, packaging plays an important part. For this purpose, aluminium finds a wide use because of its light weight, its mechanical strength, and its corrosion resistance. The author, head of the Light Metal Research Institute, Milan, surveys the relevant chemical and physico-mechanical properties of aluminium, technology and types of packings, and the experience gathered with the use of aluminium for the packing of different food products exported from Sicily. The aluminium materials are at present mainly produced in Northern Italy, but the development of a corresponding Sicilian home industry is forecast.

Utilisation of Waste in the Fruit Industry. J. M. V. Lobo, B. L. Ferriols, A. C. Carramiñana, J. C. Ferrer (*Información Conservera*, 1953, **1**, 33).—In order to find possible uses for waste products of the fruit industry, a team of research workers at the Laboratory for Organic Chemistry at Valencia University has carried out successful tests, using residue from the orange juice press as a basic product for food yeasts, with *candida orborea* serving as micro-organism. Even better results were obtained through prior acclimatisation of the yeast. Using undiluted liquid with a sugar content of at least 5 to 6 per cent. and a pilot fermenter of the Waldhof type, it is possible to obtain yeast efficiencies of 52 to 55 per cent. in relation to the sugar contained in the liquid.

Flexible Aluminium Tube. F. Emmanuele (*Información Conservera*, 1953, **3**, 12).—In the endeavour to find a less expensive substitute for tin containers as a packing material for preserves, increasing attention is being paid to the use of flexible aluminium tubes. Their advantages of light weight, recoverability, etc., are to some extent offset by certain disadvantages. One of them has been the lack of adequate acid resistance, *e.g.* against acids contained in tomato products. Recent research has permitted the use of aluminium tubes also for such products, by applying a special varnish protection, and by ensuring the hermetic sealing of the tube.

A New French Method of Milk Pasteurisation. (*Deutsche Molkereiztg.*, 1953, **74**, 1178).—An unusual feature of this process, of which only a brief account is given, is that the product, preheated to 50° to 85° C. in a tubular heat exchanger, is brought instantaneously to the pasteurising or sterilising temperature (70° to 140° C.) by direct contact with steam. The product is then cooled to the pre-heating temperature in a chamber under partial vacuum and still further in a water cooler. The advantages claimed include a considerable saving of water, steam, and electricity, easy regulation of the process, and absence of cooked flavour in the heated product.

Rumen Micro-organisms. Effects of Diet and Antibiotics on Utilisation of Non-protein Nitrogen. J. M. Prescott (*J. of Agr. and Food Chem.*, 1953, **1**, 894).—Experiments are described which demonstrate that high levels of antibiotics are capable of reducing the utilisation of non-protein nitrogen by rumen microflora *in vitro*, and indicate the desirability of *in vivo* studies before ruminants are fed routinely on a diet containing both urea and antibiotics.

Determination of Gelatin in Meat Extract and Meat Stocks—Interim Report. (*Anal.*, 1953, **78**, 134).—The method depends on formation of a gelatin-formaldehyde complex. Nitrogen in the complex is determined by Kjeldahl. Gelatin is calculated with the usual factor.

Overnutrition and Undernutrition. R. A. McCance (*The Lancet*, 1953, **165**, 685).—Discusses the control of calorie equilibrium.

Quality Control. (*Food Engg.*, 1953, **25**, 88).—A review of laboratory control methods and "quality improving" ingredients over the last 25 years.

Connective Tissue of Meat. II. Determination of Hydroxyproline. L. C. Baker, L. H. Lampitt, and K. P. Brown (*J. Sci. Food Agr.*, 1953, **4**, 165).—The density of colour produced in Neuman and Logan's method for the estimation of hydroxyproline was measured in a Hilger Spekker absorptiometer. On any one occasion satisfactory duplication was obtained with aliquots of the same solution of hydroxyproline, and a smooth curve resulted when concentration was plotted against colour density. However, from time to time the level of the curve fluctuated slightly, and therefore the colour should be developed in standard solutions, when any "unknowns" are being estimated.

Identification of Leuco-anthocyanins as "Tannins" in Foods. E. C. Bate-Smith and T. Swain (*Chem. and Ind.*, 1953, 377).—Evidence is presented to show that leuco-anthocyanins are closely related chemically to the catechins and should be regarded as prototypes of the condensed tannins.

The Port Sanitary Inspector's Work Protects the Nation's Health. P. J. Fisher (*Mun. Engg.*, 1953, **130**, 1483).—The author illustrates the importance which port health authorities attach to the cleanliness of trawlers and fish in an effort to ensure that consumers all over the country receive supplies in fresh condition.

New Sterilising Agent for Packaging Field. (*Packag. Parade*, 1953, **21**, 89).—Movidyn is an activated colloidal silver compound with a powerful bactericidal effect on all the commonly encountered germs. In the bottling, canning, and brewing industries, it can be used to sterilise containers and other equipment either by spraying or immersion, and even after the containers have been washed many times in water, the bactericidal properties remain unimpaired. Movidyn imparts no colour, taste, or odour to products in containers treated with proper amounts of the substance.

Assessing the Sterility of Milk Bottles by the Roll-tube Method. B. Pritchard, D. G. Griffiths, and S. B. Thomas (*Lab. Pract.*, 1953, **2**, 353).—The investigation included two series of experiments, the first dealing with the combined rinse of sets of five bottles taken from commercial bottle washing machines, and the second with individual bottle rinses made under conditions simulating unsatisfactory bottle washing. The relative sterility of washed milk bottles can be assessed by means of colony counts determined by the roll-tube method without any marked decrease in colony count as compared with the Petri plate method.

55 Sandwiches per Minute. (*Svenska Förpackningar*, 1953, **2-3**, 20).—Refined sandwiches, or *Smörgåsar*, are a prominent feature of Swedish luncheons. The railway-owned station restaurant at Stockholm Central Station supplies up to 5,000 sandwiches a day which had to be prepared by kitchen staff working in two shifts. The work has now been mechanised by the use of a bread buttering and slicing machine which produces 55 sandwiches per minute, taking over the work of three or four people.

Pineapple Production in French Guinea for Fresh Fruit Export. C. Py and M. Barbier. (*Fruits*, 1953, **8**, 363).—A detailed survey is given of pineapple production in French Guinea and successful efforts made in recent years to promote the European export of fresh fruit (in contrast to canned fruit) are described. The survey covers statistics of production and export; seasonal variation of fresh fruit production and shipments; methods of selecting fruits suitable for export; protection of the fruits against "sunstroke" and diseases; methods of cutting and collecting; final vetting and packing; and economic aspects of pineapple cultivation. Refined methods of selection and packing have almost succeeded in raising the quality of fresh pineapples from French Guinea to that of the well-known hothouse-cultivated fruits from the Azores.

Terminology and Quality Classification of Starch and Starch Derivatives. G. Graefe (*Gordian*, 1953, **53**, 10).—Quality specifications for starch and starch products were embodied in a West German decree in 1948. Although the decree was subsequently rescinded, the German starch industry has voluntarily continued to observe the standard specifications. However, these specifications have now been criticised as being, to some extent, inaccurate or out of date. The author discusses the existing specifications and their shortcomings, and makes suggestions for alterations and amendments.

Research in the Non-fermentative Oxidation of Vitamin A Acetate. K. E. Schulte and A. Schillinger (*Fette und Seifen*, 1953, **55**, 705).—It has been known for some time that the vitamin A contents of oils and certain foodstuffs decrease during storage, due to oxidation changes which can be accelerated by the influence of light. Interest in these phenomena has increased since vitaminisation of margarine has become a common practice. The German authors, working at the German Food Chemistry Research Institute, Munich, have investigated the influence of the different constituents of margarine on the extent and speed of vitamin A oxidation. Certain constituents, *e.g.* oleic acid ester, tend to accelerate the oxidation, but the process can be inhibited by certain admixtures (*e.g.* tocopherol) which can therefore, under certain circumstances, serve as vitamin A stabilisers. The effect has been determined by means of tests in the Warburg apparatus.

Export of Apricot Pulp from Murcia. A. de Iranzo (*Información Conservera*, 1953, **1**, 15).—A brief account of the growth of the Murcia (Spain) canning industry and export market. After years of neglect, due to the Civil War and World War II, the production of apricot pulp for export has started to show a considerable increase, some 22,000 tons being exported in 1952.

News from the Industry

FORTHCOMING EVENTS

The Royal Sanitary Institute

The London Sessional meeting of the Royal Sanitary Institute will be held as follows:

Feb. 11. "Heat Treatment of Milk within the Bottle," a discussion to be opened by Prof. E. L. Crossley.

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The Royal Society of Arts

Among the papers to be presented by the Royal Society of Arts during February are the following:

Feb. 3. "The History and Achievements of Sanitary Engineering," by Mr. F. E. Bruce.

Feb. 17. "Modern Developments in Fungicide Research," by Mr. R. W. Marsh.

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The Royal Institute of Chemistry

Among the meetings arranged by the London section of the Royal Institute of Chemistry for February are:

Feb. 12. "The Isolation of Fine Chemicals from Natural Sources," by Dr. W. Mitchell, to be held at 6.30 at the Brighton Technical College.

Feb. 13. A symposium on "Physical Methods in Biochemistry," to be held at 2.30 at Reading University Zoology Lecture Theatre.

Feb. 25. "Some Uses of Radioactive Materials in Industry and Medicine," by Mr. L. C. Myerscough, to be held at 6.30 at the South-East Essex Technical College, Dagenham.

Feb. 27. Buffet Dance (with the London Section of the Society of Chemical Industry) to be held at 7.45 at Caxton Hall, London, S.W.1.

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Acton Technical College

Parts 2 and 3 of a course of 12 lectures on "Some Aspects of Biochemistry" to be held at the Acton Technical College will be given by Dr. A. E. Bender as follows:

Part 2. The Enzymes—Their Nature and Function.—Four Lectures on February 10, 17, 24, and March 3.

Part 3. Intermediary Metabolism.—Four Lectures on March 10, 17, 24, and 31.

The four lectures under Part 1 dealing with the elements of nutrition were given on January 13, 20, 27, and February 3.

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The College of Production Technology

Eight-lecture courses covering all aspects of materials handling have been arranged by the College of Production Technology.

The course will be conducted by a team of experts, led by Douglas R. Woodley, who will discuss the latest methods, ideas of handling, and handling equipment.

The remainder of the touring programme, which started in January and covered Leeds and Bradford, Liverpool (including the Isle of Man), Birmingham, and Manchester, will be as follows:

Feb. 11 and 12. Glasgow, including Scotland West.

Feb. 18 and 19. Nottingham and Leicester.

Feb. 25 and 26. Reading, including Guildford and Oxford.

Mar. 4 and 5. London.

Mar. 11 and 12. Hull, including York and Lincoln.

Mar. 18 and 19. Newcastle, including Middlesbrough.

Mar. 25 and 26. Blackburn, including Cumberland, Westmorland, and North Lancashire.

A two-day course on cargo handling has also been arranged in collaboration with the International Cargo Handling Co-ordination Association; this is to be held on February 4 and 5 next at the Royal Society of Arts.

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Factory Equipment Exhibition

The Second National Factory Equipment Exhibition will be held at the Royal Horticultural Society's Halls, Westminster, from March 22 to March 26, 1954.

Equipment used in the following branches of industrial activity will be shown:

(*a*) Maintenance and layout of works and factories.

(*b*) The manufacture, lifting, moving, storage, and packing of goods.

(*c*) The welfare and safety of employees.

(*d*) The keeping of records and maintenance of stores and progress systems.

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Society of Chemical Industry

Two meetings of the Microbiology Group have been arranged for February as follows:

Feb. 10. Symposium on "Electronic Sterilisation and its Effects on Foodstuffs." A joint meeting with the Food Group to be held at the Low Temperature Research Station, Cambridge.

Feb. 15. "Inhibitory Substances of Bacterial and other Origins in Milk and Milk Products," by Dr. J. N. Berridge, to be held at 6.15 at the Institution of Structural Engineers.

The Food Group will hold a meeting on February 24 when a paper under the heading "Unsolved Problems in the Production of Food.—2. The Brewing Industry," will be read by Dr. A. H. Cook.

The Agriculture Group of the Society will hold a meeting on February 16 when Dr. K. L. Robinson will read a paper on "Antibiotics in Animal Feeding."

The Institute of Refrigeration

A paper on "Modern Practice in Air Separation" is to be read by Mr. A. M. Clarke before the Institute of Refrigeration on February 16.

F.M.A. Committees Appointed

At the annual general meeting of the Food Preparation and Canning Equipment Section of the Food Machinery Association, the following Executive Committee was elected:

Mr. John Ryan, C.B.E., M.C. (chairman), The Metal Box Co.

Mr. D. H. Clarke (vice-chairman), The Premier Filterpress Co.

Mr. F. D. Chadwick, Mather and Platt.

Mr. N. J. Glanfield, The Hobart Manufacturing Co.

Mr. R. Lazenby, Food Equipment.

Mr. L. A. Moody, Wm. Brierley, Collier and Hartley.

At the annual general meeting of the General Food Machinery and Ancillary Equipment Section, the following Executive Committee was elected:

Mr. W. B. Draper (chairman), Industrial Waste Eliminators.

Mr. F. H. Mills (vice-chairman), Christy and Norris.

Mr. J. V. Fox, Peerless and Ericsson.

Mr. E. O. Herzfeld, Swift and Swallow.

Mr. G. O. Inglis, The A.P.V. Co.

Mr. R. A. C. Webb, Stainless Steel Vessels (London).

Pest Control Products

Consisting of six common names for pure pest control chemicals well known in agriculture, Part 2 of B.S. 1831 has been issued by the British Standards Institution; Part 1 was published in 1952 and further lists will be published from time to time.

Of these six names, allethrin and methoxychlor are already accepted as coined common names by the United States Interdepartmental Committee on Pest Control. In both the U.K. and the U.S.A. the names have been pre-empted as far as possible for common use, by recording them with H.M. Patent Office and the U.S. Patent Office, respectively.

The common name is assigned to the 100 per cent. pure chemical and is correlated with the chemical name and the formula. Where more than one chemical name is known for that material, the first which is given is in accordance with the principle recommended by the Chemical Society of London. The common names and chemical names are indexed for convenient reference and this index may afford guidance to those concerned with indexing and abstracting, as to the preferred alphabetical arrangement of these names.

Cold buffet using F.M.S. Instant Mixes.

Instant Mixes

Sauces, the basis of soufflés, purées, piping mixtures, savoury fillings, and soups are some examples of the dishes and garnishes which can be prepared immediately from the new Instant Mixes which are being introduced, as a result of research by Mr. Robert A. Templeton, by F.M.S. (Farm Products) Ltd. These products, in finely granulated form, are pre-cooked and are prepared for use by being whisked into boiling water.

The idea of these mixes came to Mr. Templeton when he observed the properties of the gelatinised unbroken cells comprising potato mash powder when admixed with other food elements. During the process of dehydration, some of the constituents of food, notably flavouring substances, are lost, but it has been found that if such foods are absorbed before drying by the cooked starch cells, these "have a remarkable tendency to break down a wet substance into powder in a way more kind, more gentle, and more effective than any grinder which, by contrast, relies on brute strength."

It seemed that by using, for example, the dry cells of potato as a simultaneous "grinder" of cooked chicken, within certain practical limits, a chicken mix could be made in powder form as concentrated as may be necessary, and further that all condiments and other additions could equally be included, also in cooked form.

The following mixes are at present in production: chicken, fish, green pea, tomato, potato, onion, carrot, mushroom, and celery. Taking Chicken Instant Mix as an example, cream of chicken soup is immediately available on addition to the appropriate volume of boiling water (8 oz. to 2 qrt.). At the rate of 4 oz. to a pint, a chicken soufflé is ready for the addition of two eggs. A stiffer mixture at the rate of 4 to 5 oz. to the pint makes an excellent chicken sandwich filling.

Chicken paté requires 5 oz. to the pint. A pouring sauce is made immediately from 4 oz. to a quart of water, while for coating, the proportion should be 6 oz. to the quart.

Similar dishes can be made from any of the other mixes, which can also be used as the basis for more elaborate sauces.

New Plant for Buttermaking

Mr. J. R. Cuttell, dairy development engineer of the A.P.V. Co., has recently returned to this country after more than a year in New Zealand where, in co-operation with J. B. MacEwan and Co., A.P.V. agents, he has been engaged on the development of new equipment for the treatment of cream for butter manufacture.

The successful conclusion of this work was demonstrated at the recent Dairy Show when a 200/400 gallons per hour cream treatment unit was exhibited on the APV stand. The new plant carries out pasteurisation, de-gassing, and deodorisation of the cream, with very appreciable savings in the steam and water consumption coupled with ease of control and reduced fat losses as compared with methods hitherto employed.

Butter produced from cream processed in the new plant in New Zealand has consistently graded as high as the best butter produced in that country.

Salt for the Food Industry

All grades of salt, ranging from Sifta table salt and a salt so fine as to be almost without perceptible grain, to the rough crystal type are produced by Palmer Mann and Co.

A speciality of the company is the packing of Sifta table salt in 14 lb. tins for the catering trade and of salt in multiwall paper sacks. Inclusive quotations are given for this latter type of packing at very little above the standard price of salt.

Scholarships for Bakery Students

At a recent meeting of the Joint Scholarship Panel of the National Board for Bakery Education, arrangements were put in hand for the Scholarship Scheme for 1954.

The date of the examinations will be April 27, 1954, and application forms should be submitted by March 22, 1954. All applicants should apply to their Local Education Authorities, or the Ministry of Education, to see whether any other grants are available. A deputation from the National Board is attending the Ministry of Education to discuss the anomalous position arising in connexion with Out-County fees and other matters. The Sub-Committee to deal with Grants-in-Aid is also meeting in the near future.

Quick Frozen Liquid Egg

An installation for the quick freezing of liquid eggs has been completed by Thomas Howden, of Leith. The plant includes a complete sterilising room sealed off from the rest of the plant and equipped to carry out efficient sterilisation of all containers and plant used in the process. Adjoining is the processing section where a specially designed plant is used to break eggs, sift any fragments of shell adhering to the liquid, and mix the liquid to the required condition, and fill it into cans.

The new storage chamber, equipped with a service hatch to allow conveyor loading and unloading, is designed to freeze to −20° and 30°F. and to hold at −5°F.

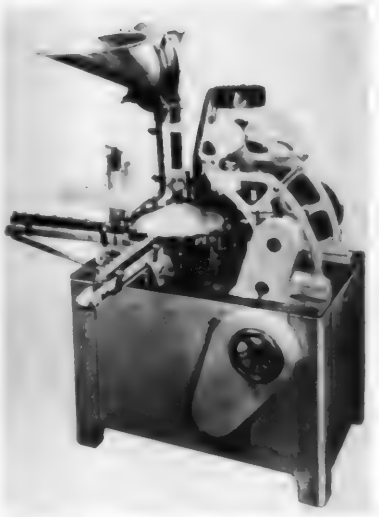
Progress in the Glass Industry

In moving the adoption of the annual report at the annual general meeting of the Glass Manufacturers' Federation, the President, Colonel C. E. Ponsonby, said that the six years of his Presidency had seen the greatest activity ever experienced in the British glass industry.

Production of glass containers, for example, had risen from 17 million gross to a peak production of 25 million gross, and the total exports of glassware reached over £12 million in 1952. Today, the theme was competition, from makers of other container materials and from foreign producers.

The Executive Committee was well aware of the dangers of rising costs of production and action to counter the spiral of inflation had been the overriding feature of work in 1953.

Colonel Ponsonby moved the election of Mr. E. A. S. Alexander, managing director of the United Glass Bottle Manufacturers, as the new President. Dr. W. Maskill, B.Sc., A.R.C.S., F.S.G.T., has been elected chairman of the Executive Committee, and Mr. L. E. Norton has been elected vice-chairman for the ensuing year.



Autopack vial filling equipment.

Vial Filling Equipment

Accommodating all standard sizes of vials, a redesigned Autopack machine is fully adjustable for size of cap and diameter of stopper; complete adjustment can be effected to accommodate a different size in less than 10 minutes. Almost any type of rubber plug can be handled by the plugging unit, which incorporates many patented features.

All parts coming into contact with the material being handled are readily detachable for cleaning or sterilising and cap spinning, crimping, or screw capping units can be fitted if required.

On a single unit output speeds of 40 to 50 per minute are possible, while in a twin unit, utilising a single inlet and outlet feeds in line, speeds of 90 to 100 may be obtained.

Flooring for Food Factories

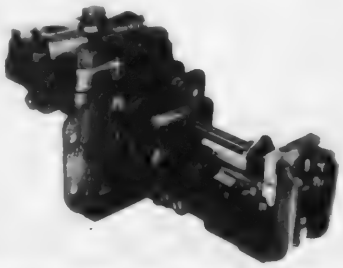
In addition to the laying of chemical resistant floors, Acalor offer a three-fold service in acid corrosion: a full range of acid, alkali, oil, and solvent resisting materials manufactured at the Company's works; a technical staff for tackling the problems of acid corrosion, and a contracts department, specialised in all fields of acid resistant construction work.

A number of types of flooring, meeting the needs of the food manufacturing industry, is available. If a good mix is employed and it is well laid, granolithic will give quite good service and may often be found preferable by the smaller dairy or factory owing to its low initial cost. It cannot be expected to give lasting service as there will always be a certain amount of free lime that will be subject to attack from acid spillage. The same applies to tiled floors laid in Portland Cement, and in the case of acid resisting asphalt there is always the difficulty of it being affected by very hot water, and of mechanical indentation under heavy weights if running temperature is at all high.

It has been found that the ideal floor is a good quality acid resistant tile, jointed with a resinous cement, that is both acid and alkali resistant, is unaffected by temperatures up to boiling point, and has a measure of resilience that will enable the floor to withstand severe mechanical wear. Such a floor has now been provided by the use of Acalor No. 9A acid and alkali resisting impermeable cement, in conjunction with suitable tiles. In cases where mechanical wear is such that even the best tiles are unsuitable, the same specification can be employed with cast iron perforated grids.

Flow Measurement

The range of industrial instruments made by Honeywell-Brown is being extended to include a differential converter, designed to meet the increasing need of industry for an instrument which has faster, more accurate response to rapid change in flow, providing control within narrower limits and, at the same time, is easy to install and maintain.



The new differential converter.

The converter operates on the pneumatic-balance principle, whereby the force of the differential pressure across the flow orifice—or from any other source—is opposed by the force of air pressure acting in a weigh beam system similar to that found in analytical balances. Air pressure developed to balance the force thereby becomes a measure of differential pressure or flow, and is transmitted by a single air line to a pneumatic receiving instrument in the form of an indicator recorder and/or controller.

The instrument has a continuously adjustable range from 20 to 200 inches of water. Range-changing needs no special tools, additional parts, or part changes, and provision is made for protection against over-range. Accuracy is within ±1 per cent. of full scale, sensitivity to differential pressure changes is less than 0·1 per cent. of scale, and response time averages three seconds for 63·2 per cent. of full scale change with 200 ft. of tubing to the receiver.

Weighing only 23 lb., and unaffected by all types of vibration normally encountered, the converter can be located close to the pressure taps and is easily and quickly installed. Its use, in conjunction with the Brown pneumatic receiver either in the form of an indicating controller, a single, two- or three-pen recorder, or a single or two-pen recording controller provides a complete element with greatly increased accuracy and exceptional economy of installation and operating costs.

Opening of New Offices

The new London Office of the Colt Associated Companies in British Columbia House, Regent Street, was formally opened by Mr. W. A. McAdam, C.M.G., Agent General for British Columbia, on December 10.

The Head Office of the Colt Companies remains at Surbiton, Surrey.

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New offices for Pollock Brown and Company, one of the 600 Group of Companies, were opened on November 26 by Mr. Harold G. Cohen, the company's chairman and a director of George Cohen Sons and Co.

Food Machinery on Show

In addition to their standard ranges of mixers, pie and pastry moulders, baking ovens, mincers, bowl choppers, potato peelers, and chippers, several new machines were shown at Hotelympia by Peerless and Ericsson.

Among these were a 7 lb. potato peeler, a small compact machine, powered by a ⅓ h.p. English Electric motor and capable of starting up under full load; a mixer with hub for attachments such as mincer, vegetable slicer, soup strainer, and oil dropper; and a new potato chipper with a capacity of 40 lb. of chips per minute.

A 7 lb. potato peeler powered by a ⅓ h.p. motor and capable of starting up under full load.

New Year's Honours

In the list of new Knights Bachelor is Col. William Charles Fenton, managing director of British Belting and Asbestos, for political and public services in Spen Valley, Yorkshire.

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Also among the Knights Bachelor is Mr. C. G. Graham Hayman, chairman since April, 1953 of the management committee of The Distillers Company, which controls all the activities of the D.C.L. organisation. For the past 30 years Mr. Hayman has been closely connected with the distilling and industrial interests of D.C.L. He became a director of the parent company in 1936.

APPOINTMENTS AND RETIREMENTS

Mr. Eric L. Bush has been appointed a joint managing director of W. J. Bush and Co.

Mr. Bush is a grandson of the founder of the company, and the second son of the late James Mortimer Bush who was chairman and managing director of the company from 1903 to 1941.

He joined the company in 1920, and was appointed a director in 1935.

During the centenary year of the company in 1951, Mr. Bush visited the South African, Australian, and New Zealand establishments, and early in 1953 was present at the opening ceremony of the new factory at La Salle, outside Montreal.

The company also announce that Mr. C. R. Woods has been appointed a director of the company.

It was as a boy of 14 that he joined the company in 1914. He was appointed manager of the Country Sales Department in 1922, and his association with the sales activities of the company has continued ever since. In 1939 he was appointed general sales manager.

Mr. E. L. Bush.

Mr. C. R. Woods.

It was on his initiative that the policy of specialised study of the requirements of the individual trades which the company endeavours to serve was begun, a policy which under his guidance has continued ever since.

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Mr. T. L. Fordy, commercial officer of the Unilever U.K. Margarine Executive, has been elected a director of Van den Berghs and Jurgens. Mr. Fordy, who joined Jurgens in 1922, has spent a lifetime on the financial and accountancy side of the margarine industry and in 1940 was seconded to Marcom, Ltd., the Government sponsored margarine distribution company, as chief accountant; he returned to his own company in 1947.

*

The retirement has been announced by Hopkinsons of Mr. F. B. Mills, as representative for their Yorkshire area. Mr. Mills, who joined Hopkinsons in 1905, is a director of the firm. He is now succeeded as representative in this area by Mr. P. K. Walker.

*

Nearly a quarter of a century ago Mr. Ernest H. Taylor joined Joseph Lingford and Son, of Bishop Auckland, County Durham, as general manager, and on the incorporation of the company in 1936, he was appointed managing director; since 1950 he has also acted as chairman of the Board of Directors. He has now retired from the company, but will continue to act as adviser and business consultant to the company.

*

Acting on medical advice that he should reduce his business commitments, Lt.-Col. Sir Cyril V. Jones, C.B.E., has relinquished his chairmanship of Foster Clark on resignation from the Board. He will, however, continue to act in an advisory capacity in connexion with certain of the company's Australian interests.

Mr. H. M. Beak, the managing director, has been elected chairman of the company, and he and Mr. N. E. Goddard have been appointed joint managing directors.

■

Mr. D. A. Rogers, formerly sales executive with C. and E. Morton, Ltd., has joined Norfolk Canneries of North Walsham as Sales Marketing and Sales Promotion Manager. He has been in the food trade since 1938.

Mr. C. W. Hobbins has also joined Norfolk Canneries as London Sales Manager, succeeding Mr. A. Gordon Hartt. Mr. Hobbins has spent thirteen years in the food trade.

Wafer Manufacturers Elect Officers

At a recent meeting of the Wafer Biscuit Association, the following officers were elected: President and Chairman, Mr. A. Facchino (Facchino's Biscuits); Vice-President, Mr. A. Antonelli (International Biscuit Co.); Hon. Treasurer, Mr. V. Cianfarani (London Ice Biscuit Co.); Secretary, Mr. F. A. Walker.

Council members elected were: Mr. A. Askey (Askey's Premier Biscuit Co.); Mr. T. A. Koenen (Valvona Ice Biscuit Co.); Mr. W. Leckenby (Variety Wafer Biscuit Co. Ltd.); Mr. A. A. G. Marcantonio (Embisco Ltd.); Mr. F. Marcantonio (Favorite Ice Biscuit Co.); and Mr. J. Rocca (Colroc Biscuit Co.).

9,405 Years of Work

The long service staff of George Cohen Sons and Co. who last year formed the Six Hundred "25" Club, held their second annual dinner in London recently.

The idea for the Club arose when a silver badge was presented to all who had served for 25 or more years with the parent company and other associated companies of the "600" Group.

Already the members number 332 and have, between them, put in no less than 9,405 years of work! Of the 332, all but 18 are still on the active list, these representing 4½ per cent. of the Group's payroll.

Tenth Anniversary Celebration

To celebrate the 10th anniversary of its foundation, D. Trapow and Co., manufacturers of Newman labelling machines, held a party for members of staff and friends of the company on December 14. Afterwards, the whole party visited the Empress Hall to see a performance of Sinbad on Ice.

Eat One, Keep One

An excellent means of promoting the sale of marshmallows in pairs, the Twin-pak, is now being used by Kunzle's. It is a sleeve of printed Cellophane cellulose film gummed across its width so that two equal pockets are formed, each holding a chocolate marshmallow. Packaging is facilitated by means of a "former" consisting of a V-shaped block. The centre of the sleeve is pushed into a slit at the base of this block and the filling ends are supported by the two sides. By this method a good speed and a neat finish are ensured. The pack is completed by twisting the film at each end and securing with a wire-strip closure.

Dawsons Buy Powleys

A further extension to their business activities has been made by Dawson Bros. by the acquisition of the entire share capital of R. Powley and Sons, of Sunderland, with whom they have been in friendly competition for many years.

The business will be carried on as a going concern, and the services of Mr. Wilfred Powley have been retained.

The supply of spares and servicing facilities for Powley machines will continue.

The joint managing directors are Mr. David Dawson and Mr. George Dawson, with Mr. T. V. Watkin as secretary.

Milk Products Plant for Venezuela

A valuable contribution to the country's export trade has been made by APV in securing a contract for setting up a milk products factory in Venezuela. The contract is for a total value of over £70,000 and is with a dollar area.

The equipment involved is all the necessary plant for the production of spray powder, together with facilities for the production of cheese and butter, for Compania Anonima Lacteos de Venezuela, C.A. (LAVENCA). The total milk throughput will be 6,600 gal. per day initially, but provision is to be made for an ultimate extension to 13,200 gal. per day.

The reception section will include power conveyors for churns, weigh-tipping plant, and a Wright-Hargreaves churn washer. The milk will be pumped through a Paraflow pre-cooler to a 3,000 gal. storage tank which will feed the butter, cheese, and milk drying plant.

The cheese plant provides for milk pasteurisation at 440 gal. per hour and includes two cheese vats of 1,000 gal. capacity, as well as curd knives, curd mill, cheese moulds and presses, and separating plant for the whey. The butter plant will handle 275 gal. of milk per hour and includes a Paraflow for milk pre-heating and skim pasteurisation, cream separator, 1,500 gal. skim milk storage tank, Paraflow cream pasteuriser, cream ripening vat, combined churn and butter washer, and Paraflow wash water chiller.

The spray drying plant provides for the initial concentration of the milk in a double effect continuous evaporator from 6,600 lb. milk per hour to 1,650 lb. pre-condensed milk, following pre-heating in a Paraflow. The pre-condensed whole milk will be dried in a Fischer type spray drying plant, for which APV have recently acquired manufacturing rights, 1,650 lb. yielding approximately 825 lb. full cream milk powder per hour.

The contract also includes steam raising plant, refrigeration plant, a completely equipped laboratory, and a complete installation of two Lister Blackstone Diesel-electric generating sets each of 140 h.p.

New Cellophane pack for Kunzle's chocolate marshmallow.

Detection of Metal in Cakes

Since the war, rapid progress has been made in the development of efficient methods for the detection of tramp metal in raw materials and finished products. Magnetic methods have always been used by Macfarlane, Lang and Co. in their factory at Osterley for cleaning fruit and other raw materials, and these have now been supplemented by the installation of "Metaltectors" developed by Loma Electronic Equipment.

The incorporation of an additional inspection station in the processing department at Osterley was facilitated by the factory's modern layout, by which all cakes are brought to the same point for check weighing before wrapping and sealing.

Each unit consists of a detecting head, through which the product to be inspected is passed by means of a conveyor band, and an electronic control unit, the latter being connected to the head by cables. The signal produced by the presence of metal in the detecting head aperture is passed into an amplifier and operates a control relay, which stops the conveyor belt and rings a bell. The contaminated cake is then removed for subsequent examination to determine the source of contamination.

A daily check is made with a standard test cake, containing a piece of alloy which is difficult to detect and much smaller in mass than the minimum size which the equipment is intended to find. By setting the standard as low as possible for the critical test, adjustments can be made within very fine limits to ensure maximum detection. In practice, only very slight adjustment is necessary over a period of weeks.

Bulk Transport of Milk from Farms

Bulk transportation of milk between farm and creamery is to be experimentally operated in Scotland. The Scottish Milk Marketing Board is reported to have in hand a project whereby a 13,000 gallon stainless steel insulated tanker will collect stored milk from a group of selected farms.

Farm storage tanks will be from 200 to 300 gallon capacity, with external insulation and incorporating refrigerating equipment to maintain a suitable storage temperature. A central stirrer keeps the cream dispersed.

Filling can be direct from the autorecorder or by hand through the tank aperture. Unloading into the tanker is effected by a low level stainless steel outlet so arranged as to give complete control from the upper level.

This method of milk transport has grown in popularity in the United States where, according to the latest survey, 6,550 farm storage tanks are in use.

COMPANY NEWS

At the sixteenth annual general meeting of J. H. Fenner and Co., the directors made the following recommendations:

(*a*) Payment of a dividend on the Preference shares of 5½ per cent. less tax for the 12 months to June 30, 1953.
(*b*) Payment of a dividend on the Ordinary shares of 12½ per cent. less tax.
(*c*) The carrying forward of £104,086 to next year.

*

The Directors of Farrow and Jackson and Purdy announce that Mr. William Mosey has joined the Board and has also been appointed a Director of the trading subsidiaries Farrow and Jackson and Purdy Machinery Company.

Mr. Frederic Raymond Fisher, who has been with the Purdy Machinery Company for some 35 years, has also been appointed a Director of both subsidiary companies.

BOOKLETS RECEIVED

A recent publication of the Pressed Steel Company is in the form of a broadsheet covering refrigeration for the meat trades.

*

The report of the F.B.I. Export Sales Conference held at Buxton from October 30 to November 1 has now been published and summarises the main points that emerged from the discussion.

■

Prepared for the motor user and published by Midland Silicones, a new publication, entitled "Silicones in Motor Windings," deals with the advantages gained by the introduction of silicone insulation.

■

Turbo-exhausters and blowers are described in the latest Sturtevant booklet. These machines are designed and manufactured for applications requiring vacuum from 2 to 10 in. mercury or air pressure from 1 to 6 lb. per sq. in.

■

In the October issue of the *BBA Digest*, published by British Belting and Asbestos, is a description of the company's works at Cleckheaton and several interesting and fully illustrated articles dealing with modern developments in belting manufacture.

*

A booklet has been issued by the Regional Advisory Council for Higher Technological Education in which are enumerated the special advanced courses held in the London and Home Counties region which do not regularly appear in college calendars or prospectuses as a part of the normal curriculum.

OBITER DICTA

● It might do people less harm if they left the lollipop and swallowed the stick.—*Dr. Weston, chairman of Dudley Health Committee.*

● When jam is fruit pulp, plus sulphur dioxide, plus colouring matter, the nature of this witches' brew should be described on the label. — *Lord Sempill, speaking in the House of Lords.*

● Nowhere in Europe can you drink water or milk without boiling for at least half-an-hour, so give thanks for living in America.—*Mr. Arthur Godfrey in a recent American broadcast.*

● Did you know that potato peelings can save life? That good nutrition lessens accidents? That pasteurised milk kills calves? That millions of germs work to keep us well? —*Advertisement for a book on Nature Cure.*

● Why do not mothers themselves make easily prepared bread or cake or wholewheat flour, instead of buying those unwholesome concoctions—synthetic cream and all? — *Lady Graham-Little, in a letter to the "Yorkshire Post."*

● Talking of cream — remember the lovely flavour of the stuff that used to come from Scotland full of boric acid? Yet I never knew a definite case of illness caused by it; you could even turn it into butter when it was sour. — "*Observer," writing in "Bakers' Review."*

● A very long way from Papoutsakia of Lobster and such delectable achievements is the quite serious talk in scientific circles about the dietary possibilities of crushed leaves, hydrolysed sawdust, and even green pond scum; what, indeed, does "food" mean?—"*The B. and G. Review.*"

● Scientists are illiterate because they are the hostages of their own professional slang; inarticulate because they cannot or do not bother to express themselves intelligibly; irresponsible because they do not consider and explain the influence of their work on ordinary people's lives. — *Mr. Ritchie Calder, speaking at a session of the British Association.*

A series of films to show the engineering possibilities of Hiduminium is to be made by High Duty Alloys. Each of the films is to be accompanied by its companion booklet, briefly outlining and illustrating the salient features, which will serve both as a permanent reminder to those who have seen the films, and as an introduction to all who have yet to do so.

*

The report of the Hygiene Committee of the National Board for Bakery Education has now been published and deals with the whole question of hygiene so far as Bakery Schools are concerned. It is divided into three sections: tuition on hygiene, regulations regarding hygiene to be observed by all students both full and part-time, and hygienic principles in the construction of bakery schools.

■

A booklet describing the properties, grades, and uses of Courlose (sodium carboxymethyl cellulose) has been published by Courtaulds. Purified Courlose has many applications in foodstuffs; in ice cream manufacture it may be used as a thickener and binder and for inhibiting the growth of ice crystals. It can also be used as a stabilising emulsion and thickener in salad dressings, sauces, and creams, and for thickening.

ERECTIONS AND EXTENSIONS

Plans have been prepared by Schweppes for the conversion of a tram depot at Brighton Road, Croydon, Surrey, into a warehouse and garage.

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Plans are being prepared by Parkside Confectionery Co. to erect extensions to their factory at Liddle Terrace, Gateshead.

■

Middlesbrough Co-operative Society are planning to carry out extensions to their bakery at South Terrace, South Bank, Eston, Yorks.

■

Permission has been granted for a new depot to be erected by Smith's Potato Crisps at Sighthill Industrial Estate, Edinburgh, at an estimated cost of £18,000.

Canning and Freezing Plants Extended

To allow an expansion of output of fresh garden peas, fresh frozen peas, raspberries, and strawberries in the coming season, plant and machinery are being reorganised by Smedley's of Dundee. It is claimed that the alterations will result in the installation of one of the fastest running production lines in existence. Smaller alterations are also being made to the company's plants at Blairgowrie and Coupar Angus.

World Food News

Madrid Congress

On the occasion of the 10th International Congress of Agricultural and Food Industries, to be held in Madrid from May 31 to June 7, 1954, the International Federation of Fruit Juice Producers will hold its 3rd International Congress. The programme will be published in due course but is expected to be concerned with legal safeguards for fruit juices, the composition and analysis of fruit juice concentrates, the utilisation of fruit juices in beverages, the composition of natural aromatic food flavours derived from fruits, the more recent information regarding oxidation in the production and storage of fruit juices, methods for the preservation of fruit juices as raw materials, tank linings, the therapeutic significance of fruit juices, the creation of an international designation to be associated with the national mark representative of fruit juices conforming with the appropriate standards, and the improvement of legislation as applied to fruit juices.

Food Technology in U.S. University

On December 1, 1953, in Amherst, an honorary Food Technology Society was founded by a group at the University of Massachusetts. The organisation, which is to be known as Phi Tau Sigma, Honorary Society, will be incorporated under the statutes of the Commonwealth of Massachusetts, with headquarters remaining at the University. It is intended that charters will be granted for the establishment of local chapters in other areas in accordance with the procedures promulgated in the Constitution of the Society. It is anticipated that chapters will be formed in Great Britain, as well as in other Commonwealth countries.

The purposes of the organisation are to "encourage the application of fundamental science to food technology, to honour and recognise achievements in the field and to promote fellowship, thereby stimulating the free exchange of knowledge in food technology." These aims will be carried out through an active programme of scientific lectures, discussion meetings, and social gatherings by chapters as well as the election to membership of qualified food technologists and advanced students of food technology.

Elected to the Board of Directors of the Society were: Milton P. Baldeuf, Robert V. Decareau, Enio Feliciotti, Gideon E. Livingston, William D. Powrie, Maynard A. Steinberg, and Donald E. Westcott. Dr. Gideon E. Livingston, Associate Research Professor of Food Technology, was elected chairman of the Board of Directors and President of the Society for 1954. Mr. William D. Powrie, Research Instructor in Food Technology, was elected vice-president; Mr. Enio Feliciotti, Instructor in Food Technology, is secretary-treasurer of the Society, and Mr. Donald E. Westcott, Instructor in Food Technology, was appointed executive secretary of the organisation.

In recognition of his numerous contributions to food technology as an inspiring teacher, a tireless research scientist, and distinguished officer of the United States Army Reserve Corps, Dr. Carl R. Fellers, Head of the Department of Food Technology at the University of Massachusetts, was elected Honorary President of the Society at the first meeting of its National Council. In addition to his many other honours, including the Institute of Food Technologists' Babcock Award and The Army's Distinguished Service Medal, Dr. Fellers is a Director of the Quartermaster Food and Container Institute Associates and a past president of the American Public Health Society, the Institute of Food Technologists, and the American Chemical Society's Agricultural and Food Division.

Aluminium Fisheries Research Vessel

A fisherjes research vessel of aluminium has been despatched from Oslo to India. The vessel has been specially built for use in the waters off Travancore-Cochin where a Norwegian technical aid team is working. The vessel is equipped with radiotelephony, echo sounder, and other technical devices.

A major part of the Norwegian aid team's task is to seek to raise the efficiency of the fishing industry in the Travancore-Cochin area by means of mechanisation of fishing boats, by improvements in fishing gear, and by the establishment of freezing plants and other distributing agencies.

OVERSEAS ENQUIRY

Food Products

H. Harvey and Company Limited, importers and exporters, suite 1225, 10, Light Street, Baltimore 2, wish to represent manufacturers of the above products.

United Kingdom manufacturers interested in this enquiry should communicate by air mail direct with the United States firm quoting prices in dollars and send lists and samples.

Firms in the U.S.A. and Canada are likely to ignore offers not expressed in dollars and North American weights and measures.

Norwegian Fish Plant for S. Africa

A complete set of machines, with a daily capacity of 250 tons, for the production of herring oil and fish meal has been delivered to a factory in Walvis Bay in the Union of South Africa by a Norwegian firm. Since the beginning of 1953, the Norwegian firm has sent similar equipment to factories in Newfoundland, Venezuela, and Brazil; future importers include Spain, Turkey, and Denmark.

Queensland-British Food Corporation

The Queensland Government is to buy for £960,000 sterling the British Government's share in the assets of the Queensland-British Food Corporation, according to the Queensland Premier, Mr. V. Gair.

Subject to making the payment and meeting all liabilities as at September 30, 1952, the Queensland Government was entitled to the whole of the assets of the Corporation, amounting to £A1,600,000. It had been decided to wind up the undertaking after a careful review of its activities by a joint committee appointed by the two Governments.

Mr. Gair added that the Queensland Government would acquire the whole of the assets by paying half the sum in five annual instalments and the other half in 21 equal annual instalments. Interest rates would be 3¼ per cent.

The Food Corporation venture in Central Queensland was established in 1948 with a target of 250,000 acres under grain, chiefly sorghum. It ceased activities in September, 1952, following heavy losses.

Emulsifiers for Ice Cream

With mono- and di-glycerides recommended for inclusion in proposed standards for ice cream now being promulgated by the Food and Drug Administration, a new bulletin "The Use of Emulsol Mono-Diglycerides in Ice Cream Production," published by the Emulsol Corp. (Chicago), is of interest.

The bulletin explains that the glycerides are used as emulsifiers in conjunction with stabilisers, the total weight of both emulsifiers and stabilisers generally not exceeding 0·30 per cent. of the mix weight. Of this, the use-level of either of the two emulsifiers described is 0·1 to 0·2 per cent. of the mix weight.

The Corporation claims that its glyceride emulsifiers, properly used, will make possible easy maintenance of controlled overrun, and a finer emulsion that will result in smaller ice crystal formation, giving smoothness, desirable freezer texture, proper "dryness," and melt-down characteristics.

Swiss Firm Opens in S. America

The company created in Brazil by the Swiss firm of Wander S.A., has now inaugurated an Ovomaltine factory at Resende, between Rio de Janeiro and Sao Paulo. This is the fifteenth factory of its kind formed by Wander.

Its construction and equipment have been carried out under the supervision of Swiss engineers. The machinery which has been installed will make possible a maximum daily production of 2¼ tons of Ovomaltine.

Except for the malt, which will have to be imported, all the necessary materials for the manufacture of this product will be obtained locally. It is also intended to manufacture certain pharmaceutical products in this plant, the importation of which into Brazil is difficult at present.

Lemon Juice and Frozen Fish

Lemon juice in concentrated or pasteurised single strength form, applied either by dip, spray, or ice glazing methods, to fish prior to freezing, provides a powerful and natural antioxidant which improves flavour and colour and prolongs storage life, according to Sunkist Growers, Ontario, California.

More effective than combinations of ascorbic and citric acids in many applications, proper use of the juice has afforded protection when ascorbic-citric preparations have failed. In addition, it is reported to be one-third of the cost of similarly effective ascorbic-citric acid solutions.

The effectiveness of lemon juice is claimed to be due to: (*a*) the presence of natural bio-flavonoid antioxidants; (*b*) its buffer system, permitting extensive dilution with a minimum loss of antioxidant properties; (*c*) rapid penetration because of its extremely low surface tension; (*d*) the synergistic or combined action of the foregoing factors with the ascorbic and citric acids normally present in the lemon juice. While solutions consisting of 120 fl. oz. of a concentrated lemon juice and 10 gal. of water afford a concentration sufficient for normal commercial applications, the specific strength of lemon juice is primarily dependent on treatment time.

By holding the temperature of the lemon juice solution below 50°F., it can be used continuously for 24 hr. The level of the solution may be maintained by the addition of dilute lemon juice of the same concentration, without build up of bacteria, because of the low *p*H (2·3) of the solution. Citrus pectin (1 to 1½ oz.) may be used with diluted lemon juice (1 gal. portions) to increase the viscosity of the treating solution and achieve a substantial coating of lemon juice that seals the fish surface from the air. When stability of the product is a particularly severe problem, it is preferable to subject the fish to the lemon juice treatment, followed by the use of the pectin and diluted juice solution.

More Danish Butter for Soviet Union

The Danish Butter Export Committee has concluded a new contract with the Soviet Union for the delivery of an additional 5,000 tons of unsalted butter. The price is believed to be about 7.60 Danish crowns per kilo, payment to be made in sterling.

The butter is to be shipped at the rate of 500 tons per week, as under the current contract. The new contract brings Denmark's butter sales to the Soviet Union to a total of 15,000 tons since last July.

News from the Ministries

Decontrol of Sardines and Sild

Controls over price and distribution of canned sardines and sild which have lasted 12 years have now been removed.

There are now ample supplies of canned sardines and sild and all other varieties of canned fish, except salmon and crab. Salmon and crab will become the only two varieties of canned fish to be imported and controlled by the Ministry of Food.

Prunes from U.S.A.

U.S.A. Foreign Operations Administrative have allotted $5 m. for the purchase by private traders of U.S. prunes against payment in sterling.

This allotment has been made under the provisions of Section 550 of the Mutual Security Act, and importers will be required to conform to certain terms and conditions laid down by the U.S. authorities to ensure that the dollars spent in the purchase may be recovered under the Mutual Security Act procedure.

First-hand distributors of dried fruit will be given authority by the Ministry of Food to purchase U.S. prunes to a stated value based on their unit voucher entitlement under the recent dried fruits control scheme of the Ministry. First-hand distributors may arrange to import the fruit themselves or through a recognised agent of a U.S. packer or exporter; import licences will be required.

Canned Fruit Imports

Price control of imported canned grapefruit, mandarin oranges, and pineapples ended on January 1. From the same day private imports of these varieties of canned fruits were permitted, subject to the licensing arrangements already announced by the Board of Trade.

Condensed Milk Prices Freed

All types of condensed milk were freed from price control on December 9, 1953 as a first step towards decontrol.

Under the new Condensed Milk Order the manufacture of condensed milk will continue to be licensed pending final decontrol.

Ample supplies of condensed milk are available as a result of a satisfactory production season in this country.

Wholesale Licensing Control to End

Wholesalers need no longer be licensed to sell butter, cheese, margarine, cooking fats, lard, bacon, and ham, the last foods to be freed from wholesale licensing control.

Anyone wishing to trade by wholesale in these commodities is now free to seek nomination by retailers and establishments. Only traders engaged in genuine wholesale distribution will normally be able to buy the foods concerned at wholesale buying prices.

New entrants to the wholesale trade in any of these foods are reminded that retailers and establishments may change their suppliers only at intervals of 16 weeks and that they must notify food offices of a change of supplier eight weeks in advance.

New entrants to the wholesale bacon and ham trade are asked to advise the Ministry of Food, Bacon and Ham Division, Stanmore, Middlesex, of their intention to enter this trade.

Dried White Beans from Dollar Sources

Dried white beans other than soya beans and beans for sowing can be imported under open individual licence (*i.e.* without restriction as to quantity) if originating in and consigned from the following countries: Bolivia, Canada, Colombia, Costa Rica, Cuba, Dominican Republic, Equador, El Salvador, French Somaliland, Guatemala, Haiti, Honduras, Liberia, Mexico, Nicaragua, Panama, Philippines, Tangier, United States of America, and Venezuela.

Australian and S. African Fruit

Agreement has been reached with Australia and South Africa for the purchase of not less than 60 per cent. of their exportable surplus of canned apricots, peaches, and pears up to the end of September, 1954.

Imports of Groundnuts

Imports of hand-picked selected groundnuts are to be returned to the private trade as from February 1, 1954. Groundnuts commonly described as "Fair Average Quality" used for crushing for oil will still be imported solely by the Ministry of Food and are not affected by this decision.

Oils and Oilseeds

Control over processing, sale, and use of some of the less important oilseeds and edible oils ended on January 1, and private imports are now permitted. The oilseeds and oils to be decontrolled are soya beans, shea nuts, kapokseed, soya bean oil, shea butter or oil, kapokseed oil, maize oil, herring oil, pilchard oil, and seal oil. The Oils and Fats (No. 2) (Amendment No. 2) Order, 1953, has been made to give effect to this decision.

The amending Order also frees margarine, cooking fats, and lard from wholesale licensing control.

Pasteurised and Sterilised Milk

From October 1, 1954, containers for pasteurised milk must be fitted with caps or covers which overlap the lips of the containers, to provide better protection for the milk.

Pasteurisers will also be required from the same date to put pasteurised milk in containers for delivery to the consumer at premises where it is pasteurised.

After consultation with representative organisations, it has been decided to allow milk to be sterilised in cans or other suitable containers, as well as in glass bottles. Previously the description "sterilised" has been limited to milk sterilised in glass bottles.

Labelling of Food Order Amended

Sales of Atholl Brose are now permitted under the Labelling of Food (Amendment) Order, 1953.

Atholl Brose, a well-known homemade drink in the Highlands of Scotland, is made from malt whisky, oatmeal, honey, and cream. Under the Order, it must contain not less than 25 per cent. proof spirit.

The Order also allows flour, national flour, and national brown flour to be sold without a declaration of ingredients, provided they comply with the requirements of the Flour Order, 1953.

The same Order removes from the principal Order specific reference to soft drinks, saccharin, and sweetening tablets since these are now the subject of separate Standards Orders and are therefore included in the general category of foods the ingredients of which need not be declared on the label.

Imported Processed Cheese

Restrictions on the size of pack in which processed cheese (excluding processed cheese of rationed varieties) may be imported from certain countries without separate licences have been removed. Sales in the U.K. are now free of price control.

At present this processed cheese may be imported only when packed in portions weighing not more than 8 oz. net.

The manufacture and sale of home-produced processed cheese were decontrolled on May 17, 1953.

Milk and Dairies Regulations Amended

Grocers and other traders who sell cream in tins or other hermetically sealed containers delivered to their premises no longer have to register with their local authorities.

The Milk and Dairies (Amendment) Regulations, 1953 (S.I. 1953 No. 1876), which free traders from this requirement of the Milk and Dairies Regulations, 1949, have been made by the Ministers of Health, Agriculture and Fisheries, and Food, with effect from December 27, 1953.

This change does not apply to those traders who sell fresh milk, or cream in other types of containers.

Food Imports for 1954

Import licensing arrangements for various kinds of food, oil seeds, and edible oils from certain countries during 1954 have been announced by the Board of Trade as follows:

Bananas.—The licensing arrangements announced on March 25, 1953, to cover imports from certain countries for the remainder of this year are being continued for the first three months of 1954.

Biscuits, confectionery, canned fruit, etc.—Arrangements for the import of biscuits, chocolate confectionery, chocolate couverture, sugar confectionery, and canned and bottled fruit from certain countries (mainly Western Europe) during the first six months of 1954 are similar to those operating for the second half of 1953.

Canned or bottled grapefruit and pineapple.—Following the decontrol of these foods on December 31, 1953, they can be imported by private traders from certain countries without the need to obtain separate import licences provided the fruit is grown and packed in the particular country or territory named.

Some oil seeds and edible oils.—Following the decontrol of some oilseeds and edible oils, these goods can be imported from the sterling area, Muscat, and Oman without the need to obtain separate import licences and from certain other countries on quota.

Soya beans.—Soya beans may be imported from any source by recognised seed crushers and millers. Licence holders will be required to give an undertaking to make returns of imports to the Ministry of Food and that the beans will be used for seed crushing or milling only.

Existing arrangements by which cream can be imported from the sterling area without import licence and from other countries (except the dollar area and Eastern Europe) under specific import licences are being continued for the first six months of 1954.

Following the Ministry of Food's announcement that control of imports of shell eggs will end during 1954, the Board of Trade announce that private imports will now be permitted from sterling area countries without the need to obtain separate import licences. From April 1, 1954, private imports will be permitted from non-sterling sources (except the dollar area and Eastern Europe) under specific import licence.

Quotas for the first half of 1954 have now been fixed for imports of shelled and unshelled edible nuts (excluding peanuts) and grapes (other than hothouse grapes) from Spain and Spanish overseas territories.

Following decontrol of hand-picked selected peanuts, the Board of Trade announce that from February 1 they can be imported under open individual licences. The licences will be subject to certain conditions laid down by the Ministry of Food.

Standards for Soft Drinks

Manufacturers and packers of soft drinks now no longer need licences from the Ministry of Food following the amendment of the Soft Drinks Order, 1947.

The minimum standards for soft drinks at present prescribed in this Order will be continued with minor modifications in a new Order, the Food Standards (Soft Drinks) Order, 1953, which came into force on December 20. This is intended as a temporary measure pending consideration by the Food Standards Committee of the future scope and level of these standards.

The modifications in the new Order comprise:

1. The exemption from the prescribed minimum standards for certain medicated and glucose beverages hitherto exempted by licence.
2. The application of the prescribed minimum standards, with modifications, to drinks for diabetics and to ginger beer and herbal and botanical beers, which were formerly covered by licences.
3. The omission of specific references to non-alcoholic wine, non-alcoholic cider, and non-alcoholic perry which are now covered by the general heading "any other description of soft drink containing fruit juice."
4. The inclusion of a new description of drinks made from whole fresh oranges.

Information and Advice

This Service is available to subscribers to FOOD MANUFACTURE. If a stamped addressed envelope is enclosed replies will be sent by post, but enquiries cannot be answered by telephone.

Pork Luncheon Meat

B.6843. *We are contemplating the manufacture of pork luncheon meat. Could you provide us with a suitable formula?* (Scotland)

The following is a typical formula for an open pack product, and may be used as a basis for trial.

	lb.	*oz.*	*Seasoning*	*oz.*
Lean pork ...	6	—	Ground white pepper	1
Pork fat	2½	—	Ground mace	¼
Cooked beef ...	2	—	Ground parsley ...	¼
Scalded rice flour	2	—	Ground thyme ...	¼
Dry rusk	1	—		
Milk (or its equivalent in milk powder) ...	1	6		

The lean and fat are cubed and packed down for 36 hours with the following cure:

	oz.
Salt	4½
Saltpetre	½
Sugar	½

The cured lean meat is passed through the fine plate on the mincer and the fat through the coarse plate. The lean meat is placed in the bowl chopper and the seasoning, rice, and rusk (dry) are added, the fat being put in last of all. The whole is chopped to a smooth paste and filled into a suitable container which has previously been slightly greased. Cooking should be carried out at a temperature of 180°F. for about two hours.

Oat Cakes

B.6890. *We wish to include a good quality oat cake in our range of products and should be glad if you could let us have a formula.* (Cambs.)

Oat cakes can best be made from a meal of medium particle size. Often about 15 per cent. of wheat flour is mixed with the oatmeal to make the dough easier to handle. Sometimes a pinch of bicarbonate is included in the mix.

The following formula may be used as a basis for trial:

	lb.	*oz.*
Oatmeal (or 3½ lb. oatmeal plus ½ lb. flour of good strength) ...	4	—
Lard	—	2
Salt	—	1

The fat is rubbed into the meal and a well is made in the centre, into which is placed the salt and sufficient warm water to make the meal into a dough. The dough should be made fairly soft as it will tighten. It is scaled into pieces weighing about 6 oz., each of which is moulded up round. These are then rolled until they are about ¼ in. thick and about 8 in. in diameter. The use of some dry meal may be required to prevent sticking. The rolled pieces are baked on one side until they are nearly done and are then turned over. They are removed from the plate when they begin to curl during the baking of the second side and are placed on a rack over the plate where they undergo drying and toasting. Alternatively they can be placed on a clean baking sheet and dried for a few minutes in the oven.

Canning of Apples

B.6891. *Could you please supply us with a method for the canning of apples?* (Kent)

The best variety of English apple for canning is the Bramley Seedling. The fruit should be graded so that after peeling and slicing the quarters are of approximately the same size. After being fed by hand into a peeling and coring machine, the apples pass on to a roller inspection table, where any brown or bruised portions are removed. After hand trimming, the apples are fed to another machine which removes the remainder of the seed cells, and cuts the apples in quarters, which pass at once into tanks containing dilute brine, the latter preventing discoloration of the fruit.

After brining, the quarters are shovelled out on to a wide conveyor belt which carries them under sprays of cold water while they are again inspected for the purpose of removing any bruised or discoloured pieces. For solid pack, the slices are then conveyed through a steam box or preheater, where they are softened sufficiently to render them pliable, after which they are sprayed lightly with cold water and packed while still hot into No. 10 cans, the quarters being pressed down to give a solid pack. The filled cans are then passed through the exhaust box, towards the end of which sprays of hot water fill the cans to overflowing. They are then sealed and carried through automatic cookers and coolers.

The processing times for solid pack apples in No. 10 cans are as follows:

Preheat: five minutes at 180° to 190°F.
Exhaust: seven minutes at 190°F.
Cook: 20 minutes at 212°F.

Information Supplied

The Enquiry Service has dealt with requests for the names of manufacturers and suppliers of plant, machinery, and materials, and also general information as follows:

B.6811. *Dried fruit, potato crisps, and electric labelling equipment.* (Berks.)
B.6812. *Icing sugar grinders.* (Lancs.)
B.6814. *Meat and bone meal.* (Ireland)
B.6815. *Powdered cheese.* (Scotland)
B.6816. *Can code numbering.* (Wilts.)
B.6817. *Coffee essence.* (London)
B.6820. *Wooden vats.* (Denbigh)
B.6821. *Packaging of shredded suet.* (London)
B.6822. *Synthetic sausage casings.* (Lancs.)
B.6823. *Hand drying equipment.* (Ireland)
B.6826. *Ham cookers.* (Ireland)
B.6827. *Temperature recorders.* (Scotland)
B.6828. *Raisin seeders.* (Lancs.)
B.6829. *Trade mark registration.* (Lancs.)
B.6831. *Rusks, antioxidants, mincemeat, and Christmas puddings.* (India)
B.6832. *Colour for glacé cherries.* (London)
B.6833. *Juice extraction.* (Lancs.)
B.6836. *Dicing equipment.* (Lancs.)
B.6839. *Retorts.* (London)
B.6840. *Can coding equipment.* (Middx.)
B.6841. *Potato crisps.* (Ireland)

Erratum

B.6780. *Tenderising sausage casings.*—In the December, 1953 issue of FOOD MANUFACTURE mention of a "pectin alginate casing" was made. This should have read a "sodium alginate casing."

Recent Patents

700,613. BEER, D. A. E.: Method of and apparatus for the production of ice cream sandwich wafers.
700,668. DEWEY AND ALMY CHEMICAL CO.: Packaging of food.
700,669. CAVANNA, T.: Method of and apparatus for drawing out the fruit stones from cherries and the like.
700,749. CONCENTRIC MANUFACTURING CO. LTD.: Pastry moulding machines of the intermittently rotatable table type.
700,775. NAAMLOOZE VENNOOTSCHAP VEREENIGDE STEARINE KAARSENFABRIEKEN GOUDA-APOLLO: Process for separating mixtures of fatty acids.
700,792. MCNEIL AND CO., LTD., J.: Sugar cane mill installations.
700,869. BRITISH BAKING INDUSTRIES' RESEARCH ASSOCIATION, COPPOCK, J. B. M., and BENNETT, R.: Manufacture of bread and the treatment of flour used.
701,336. SIMON, LTD., H.: Sieving or purifying machines for flour mills stocks.
701,366. BADISCHE ANILIN- AND SODA-FABRIK: Recovery of sugar from molasses.
701,632. ROLLINSON, E. W. (Kraft Foods Co.): Process for producing non-reverting, edible oils and fats.
701,650. BAADER, R.: Fish dressing methods and machines.
701,657. INFRABAKE CO., LTD.: Apparatus for baking bread and similar food products.
701,697. PRITCHITT AND CO., LTD., L. E.: Manufacture of a powder for making a cream-like substance when mixed with water.
701,700. MILPRINT, INC.: Cheese packaging.
701,841. TAYLOR, F. R.: Tanks for moulding jellies or like confections.
701,927. IDEAL WRAPPING MACHINE CO.: Candy making machine.
701,939. REMY, P.: Processes for applying caps for bottles, cans, and similar containers.
702,028. MIAG MUHLENBAU UND INDUSTRIE GES.: Means for conveying ground material from milling machines.
702,062. MCNEIL AND CO., LTD., J.: Mechanical screeners for raw sugar mill juice or other liquid carrying suspended matter.
702,286. FOOD MACHINERY AND CHEMICAL CORPORATION: Method and apparatus for packaging.

ABSTRACTS OF BRITISH PATENTS

Temperature Control of Milk

This invention relates to the treatment or temperature control of milk in the churn or can of a milking apparatus.

The apparatus includes a vacuum pump for effecting the milking operation, a can for receiving the milk, means for effecting a substantially air-tight closure to the can, means connecting the can above the milk to the vacuum pump, and means permitting entry of air through a duct which opens near the bottom of the can below the liquid so as to agitate the milk in the can. As the quantity of air involved for agitation is small, the vacuum pump of a milking machine can easily deal with the additional duty. The agitation air may be introduced from the atmosphere through a suitable control device. The air control device is fitted to the vacuum-tight lid of the milk churn or milk can and forms part of the present invention.

700,986. *National Research Development Corporation.*

Stuffed Products

An apparatus has been designed for the continuous production of stuffed products, such as sausages, frankfurters, and the like, the combination of a stuffing nozzle, conduit means connected to the nozzle for conveying the plastic stuffing material thereto, means for applying an adhesive to one edge of a strip of sheet material, for shaping the material into tubular form about the conduit, for sealing the longitudinal edges of the strip of sheet material to form a tube or casing on the conduit, for feeding adjacent the conduit and nozzle for feeding the casing over the same, stuffed product moulding adjacent the discharge opening of the nozzle, and for continuously moving the moulding part along the path of travel of the stuffed product.

696,864. *American Viscose Corporation.*

Preparation of Vitamin B_{12}

The invention is concerned with a process of preparing vitamin B_{12} from a concentrate, such as a concentrate predominantly composed of a *Streptomyces griseus* elaboration product, by extracting the concentrate with a solvent, effecting chromatographic fractionation (by adding the solvent solution to a column of adsorbent material and washing the column with solvent to elute the active substance from the absorbent material) and recovering by further purification of the eluate vitamin B_{12} in the form of red crystals.

It is also concerned with a process of preparing vitamin B_{12} from a concentrate, such as a liver preparation by subjecting the concentrate to chromatographic fractionation upon a column of activated material, and recovering the vitamin in a concentrated and purified form.

694,943. *Merck and Co., Inc.*

Caffeine-deficient Coffee

A process is given for the production of caffeine-deficient roasted and ground coffee consisting in driving aroma off the roasted and ground coffee by heat into an inert gas, and then extracting caffeine from the thus dearomatised coffee, whereupon the caffeine-deficient coffee or an extract obtained from it can have coffee aroma added to it.

It is an advantage to have the inert gas at the same temperature as the coffee during removal of aroma therefrom and to maintain the inert gas at that temperature until the aroma is required, for example to aromatise other coffee or coffee extract.

No fat is extracted from the coffee until after removal of the aroma therefrom and is preferably extracted before or during extraction of caffeine.

Where fat is extracted with caffeine, the fat may be separated from it after extraction by dissolving the fat in a solvent in which caffeine is substantially insoluble. The solvent may be cold petroleum ether.

Alternatively, where fat is extracted with caffeine, the fat may be separated from the caffeine after extraction by treating the mixed fat and caffeine with hot water to dissolve the caffeine and thus separate from the fat, which floats on the surface of the water.

700,598. *Ronald Oliver Blench.*

British patents and trade marks have been selected from the "Official Journal of Patents" and the "Official Trade Marks Journal" and are published by permission of the Controller of H.M.S.O.

Puffing Cereal Grains

This invention relates to the puffing of cereal grains and more particularly to the production of puffed cereal products of the well-known and widely used breakfast food type such as puffed wheat and puffed rice.

It has been proposed to minimise the disadvantages of batch operation by the use of automatic or semi-automatic apparatus in which a plurality of puffing guns is operated in sequence with overlapping cycles, as for example by charging one gun while another is under steam pressure and while still another is being discharged.

It has also been proposed to heat a charge of grain in a pressure container, and then to open a relatively small discharge outlet so that the pressure in the container forces the mass of grain into the outlet and the individual grains of the charge are progressively expelled.

700,140. *General Foods Corporation.*

Coating Ice Creams

The object of this invention is to improve the coatings of iced products, the purpose of such improvements being to remedy various disadvantages and to permit the formation of non-brittle coatings, which may or may not be chocolate-flavoured, without the use of fatty materials in the coating product, such coating being of a low cost and applicable to iced products of small dimensions.

These improvements consist in coating the confectionery or ice cream by dipping it into a bath at a temperature of substantially 0°C. (32°F.), which bath consists of an aqueous solution of one or more of the hygroscopic compounds glucose, levulose, and glycerine, together with a thickening material, such as pectin, and is free from fats.

698,760. *Glacés Gervais.*

ABSTRACTS OF FOREIGN PATENTS

U.V. Treatment for Milk

Apparatus for the ultraviolet ray treatment of milk for vitaminising purposes is described. During ray treatment, the milk flows in a thin film over guide surfaces which have edges running in the direction of and transverse to the direction of flow.

853,378. *Optische Werke C.A. Steinheil Söhne.*

Fruit Sorting

A sorting machine for fruit and the like is equipped with endless conveyor bands between which the fruit passes according to size. The bands consist of round elastic pipes which are so led in angle irons over the whole length of the conveyor that their distance apart at every point of the whole forward run is exactly fixed.

857,454. *Fa. Heinrich Rausch.*

Trade Marks

MILL BRAND.—670,590. Tinned fruits and tinned vegetables. **Tieleman and Dros. Commanditaire Vennootschap op Aandelen** (a Limited Partnership organised under the laws of the Kingdom of the Netherlands) (sole responsible partner **Cornelius Willem Tieleman**), also trading as **Tieleman and Dros Commanditaire Vennootschap,** Middelstegracht 97, Leiden, Holland; Manufacturers and Merchants.

FARMER'S BRAND.—694,852. Condensed milk. **Naamloze Vennootschap J. Van Dorp** (a Limited Liability Company incorporated under the laws of the Netherlands), Van Bergen, Ijzendoornpark 10, Gouda, Holland; Manufacturers and Merchants.

MASON'S.—698,813. Pickles and olive oil for food. **George Mason and Company, Limited,** Chelsea Works, 265, Merton Road, Southfields, London, S.W.18; Manufacturers.

CERELOSE.—710,548. Powdered glucose prepared for use as food. **Corn Products Refining Company** (a Corporation organised and existing under the laws of the State of New Jersey, United States of America), 17, Battery Place, City of New York, State of New York, United States of America; Manufacturers.

FIR TREES.—717,296. Dairy products (for food). **James Cowpe, Annie Procter, Margaret Cowpe,** and **Annie Bateman,** trading as **Mark Procter and Company,** Ashley Dairy, Longridge, near Preston, Lancashire; Dairymen and Merchants.

SPACE ACE.—717,583. Bubble gum, being chewing gum. **Maurice Freeman,** 62, Boxtree Road, Harrow Weald, Middlesex; Manufacturer.

LYT-O-PUFF.—717,686. Emulsions consisting principally of edible fats for use in making puff pastry. **W. Brandis and Company, Limited,** 132, Western Road, Mitcham, Surrey; Manufacturers and Merchants.

FRO-LIK.—718,388. Ice cream, water ices, fruit ices, and sorbets (iced confections). **Eldorado Ice Cream Company, Limited,** 14, West Smithfield, London, E.C.1; Manufacturers.

AZALEA.—718,609. Cheese spread. **Bel Cheese, Limited,** Princes Street, Northam, Southampton; Manufacturers and Merchants.

MURRAYMINTS.—718,862. Mint flavoured confectionery (not medicated). **E. S. Murray and Company, Limited,** Portsoken House, 155-157, Minories, London, E.C.3; Manufacturers and Merchants.

BESAN.—719,347. Biscuits (other than biscuits for animals). **Genatosan, Limited,** 12, Derby Road, Loughborough, Leicestershire; Manufacturers.

MARANGO.—719,448. Substances for use in making edible cake decorations. **The Scottish Flavour and Colour Company, Limited,** Mayfield Works, 27-29, Ratcliffe Terrace, Edinburgh; Manufacturers and Merchants.

JOLLYTIME.—719,470. Non-medicated sugar confectionery. **John Holmes Confections, Limited,** Fern Road, Wolverhampton; Manufacturers.

JAMBOREE.—719,510. Jams and marmalade. **Canning and Wildblood, Limited,** Purity Works, Freeth Street, Birmingham, 16; Fruit Preservers.

SUNNI.—719,666. Edible oils and edible fats. **Western Margarine, Limited,** Westfields Road, Acton, London, W.3; Manufacturers.

LITTLE BOY.—720,079. Biscuits (other than biscuits for animals), cakes, pastry, and non-medicated confectionery. **Wright's Biscuits, Limited,** Rutland Street, South Shields, Co. Durham; Biscuit Manufacturers.

TITANICS.—720,415. Cooked meats and sausages. **Maurice Hyman,** 26, Bury Old Road, Cheetham, Manchester, 8; Manufacturer.

CAERPHROLL.—721,059. Cheese. **Wilts United Dairies, Limited,** Bythesea Road, Trowbridge, Wiltshire; Manufacturers.

NESTLÉ'S.—721,114. Pharmaceutical preparations; infants' and invalids' foods and dietetic foods. **The Nestlé Company, Limited,** Hayes, Middlesex; Manufacturers.

SNOWCLOUD.—721,555. Preparations in powder form for use in making artificial edible cream. **L. E. Pritchitt and Company, Limited,** 262, Uxbridge Road, Hatch End, Middlesex; Manufacturers.

COROMARZ.—721,603. Almond paste. **Burton, Son and Sanders, Limited,** 8, College Street, Ipswich, and St. Peter's Wharf, Ipswich; Wholesale Provision Dealers and Importers.

ENNA.—721,746. Infants' foods. **Enna, Limited,** Bideford Avenue, Perivale, Greenford, Middlesex; Manufacturers.

GOLDEN STAR.—721,780. Non-medicated boiled sugar sweets, toffee, sugared almonds, dragées, turkish delight and sweets in jelly form. **Food Preserving and Canning Industries, Limited** (a Joint Stock Company organised under the laws of Cyprus), Meletiou Metaxaki Street, 1, Nicosia, Cyprus; Manufacturers.

ICECOA.—721,869. Edible oils and edible fats. **Loders and Nucoline, Limited,** Unilever House, Blackfriars, London, E.C.4; Manufacturers.

COVE BRAND.—722,222. Dried and canned fruits, dried and canned vegetables, canned fish, and canned meat. **Stevens and Brotherton, Limited,** 24, Philpot Lane, London, E.C.3; Produce Merchants.

SNOWBERRY.—722,308. Frozen confections. **Northern Dairy Ices, Limited,** Clough Road, Hull, Yorkshire; Manufacturers.

HARLEQUIN.—722,433. Cakes, cake mixtures, and puddings. **I. H. Lavery and Company, Limited,** Red Cat Lane, Burscough Bridge, Ormskirk, Lancashire; Manufacturers.

New Companies

Milk Products (N.Z.), Limited. (525477.) Nom. cap.: £20,000 in £1 shares. Dirs.: W. Marshall (ch.), C. P. Agar, H. E. Blyde, R. W. Greenough, A. Hayward, A. H. Woolven, and J. W. Rodden. Subs.: R. Perrey (clk.), 23, Southcourt Avenue, Linslade, Leighton Buzzard, and J. R. Lawler (clk.), 3, Beresford Terrace, Highbury New Park, London, N.5.

Mickeypop Confections, Limited. (525478.) 83, Ebury Street, London, S.W.1. To carry on business of manufacturers of and dealers in chocolate, sweets, confectioneries, chewing gum, tea, cocoa, coffee, sugar, and foods, and biscuit manufacturers. Nom. cap.: £4,500 in £1 shares. Dirs.: S. Finley, 68, Hightrees House, Nightingale Lane, London, S.W.12; H. E. Lewis, 2, Inver Court, Queensway, London, W.2; R. W. Stroud, and J. A. Hill.

Savex Prime Products, Limited. (525507.) To carry on business of merchants, manufacturers of, and dealers in animal, vegetable or mineral substances used separately or in combination as human or animal food. Nom. cap.: £10,000 in £1 shares. Dirs.: R. F. Milton, 26, Park Crescent, London, W.1; S. R. Hedges, Wellways, Bell Lane, Bell Bar, Hatfield, and W. H. Mealey, 82, Munton Road, Abbey Wood.

Eugene Somlyo, Limited. (525704.) 11, New Street, Bishopsgate, London, E.C.2. To carry on business of manufacturers of and dealers in foodstuffs of all kinds. Nom. cap.: £1,000 in £1 shares. Permt. dirs.: E. Somlyo, 9, Ascot Court, Grove End Road, London, N.W.8; F. J. Stein, 29, Cambridge Park Court, Twickenham, Middlesex, and E. H. Athenassoglou, White Legers, St. Stephens Road, London, W.

Nelson and Lucas, Limited. (525714.) 5, Snowhill, Manchester, 4. To carry on business of manufacturers of refrigeration goods in all its branches, and renters of cold storage rooms. Nom. cap.: £2,000 in £1 shares. Dirs.: N. Nelson, 17, Delamere Road, Ainsdale, Southport, and N. N. Lucas, 721, Huddersfield Road, Oldham.

Pure Butter Fat Process Company, Limited. (525716.) Factory Estate, Church Road, Harold Wood, Essex. To take over the business of a preparer of foodstuff components carried on at 10, Watling Street, Bexleyheath, Kent, by Donald E. Platt. Nom. cap.: £1,000 in £1 shares. Dirs.: D. E. Platt, 14, Windermere Road, Bexleyheath, Kent; F. G. V. French, 124, Wingletye Lane, Hornchurch, Essex, and E. E. French 16, Wingletye Lane, Hornchurch, Essex.

Aberdeen Chocolate Company, Limited. (525736.) To carry on business of manufacturers of and dealers in chocolate and sugar confectionery. Nom. cap.: £10,000 in £1 shares. Dirs.: not named. Subs.: Jean Herbert (co. dir.), and Claire Moore (secy.), 128, Albany Street, London, N.W.1.

Hansella Machinery and Packaging, Limited. (525766.) To carry on business of general and mechanical and electrical engineers, manufacturers and importers of and dealers in bakery, chocolate and confectionery machinery, food processing, wrapping and packaging machinery. Nom. cap.: £10,000 in £1 shares Dirs.: to be appointed by subs. Subs.: F. L. Gunstone (clk.), 30, Woodside Road, Amersham, Bucks, and Margaret A. Needs (sec.), 1, Queen's Court, Queen's Road, Richmond, Surrey.

Dereham Egg Transport, Limited. (525991.) Sandy Lane, Dereham, Norfolk. To carry on business of distributors of eggs, egg substitutes, and proprietors of egg packing stations. Nom. cap.: £100 in £1 shares. Dirs.: H. R Warren and Edith B. Warren, Rookery Farm, Etling Green, Dereham.

Food Confections, Limited. (525994.) 52-54, High Holborn, London, W.C.1. To carry on business of manufacturers of and dealers in food, provisions, groceries, and meat extracts. Nom. cap.: £100 in £1 shares. Dirs.: to be appointed by subs. Subs.: J. L. Freedman, 2, Woodward Avenue, Hendon, London, N.W.4 (solr.) and M. Brown, 27, Birchwood Court, Edgware, Middlesex (solr.).

Central Casing Company, Limited. (526034.) 29, Southampton Buildings, London, W.C.2. To carry on business of importers and exporters of and dealers in sausage skins and casings. Nom. cap.: £2,000 in £1 shares. Dirs.: C. P. Lipton, 11, Albemarle Mansions, Heath Drive, London, N.W.3, and P. E. B. Hall, Karolia, Waterbeach Road, Landbeach, Cambs.

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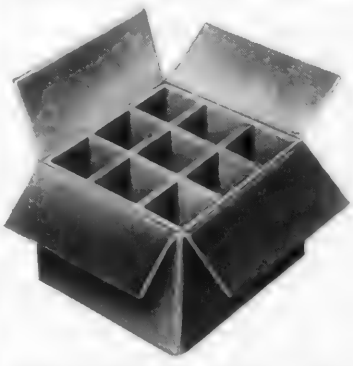

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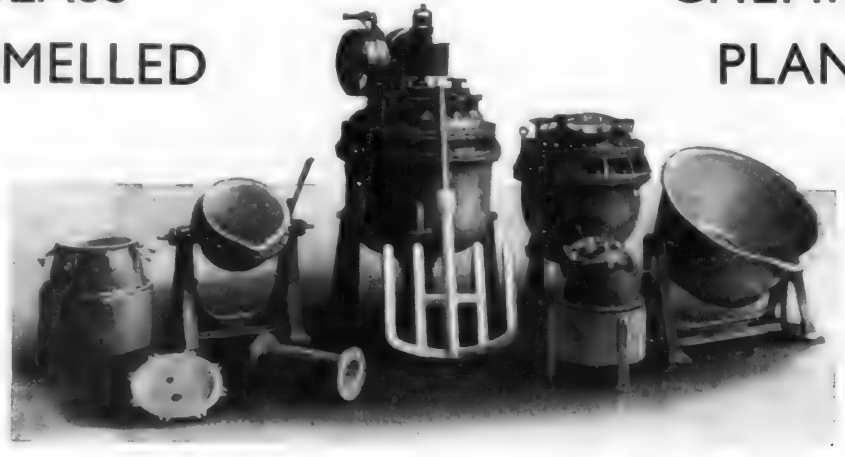

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D.B.1. "Self-Sterilising Surfaces Created by Decorating."

D.L.12. "Bacteriologists', Pathologists' and Research Associations' Reports on DENTOLITE."

D.R.7. "Field Test on DENTOLITE Self-Sterilising Paint by a National Research Association."

D.R.6. "DENTOLITE Self-Sterilising Emulsion Paint — Its effectiveness against Tubercle Bacilli."

D.R.5. "Investigation into the Ability of Various Types of Paint to Suppress Microbial Growth."

D.L.3. "DENTOLITE —The perfect Satin Finish Wall Enamel."

P.M. "Painting Maintenance Manual — Bakeries and Food Factories."

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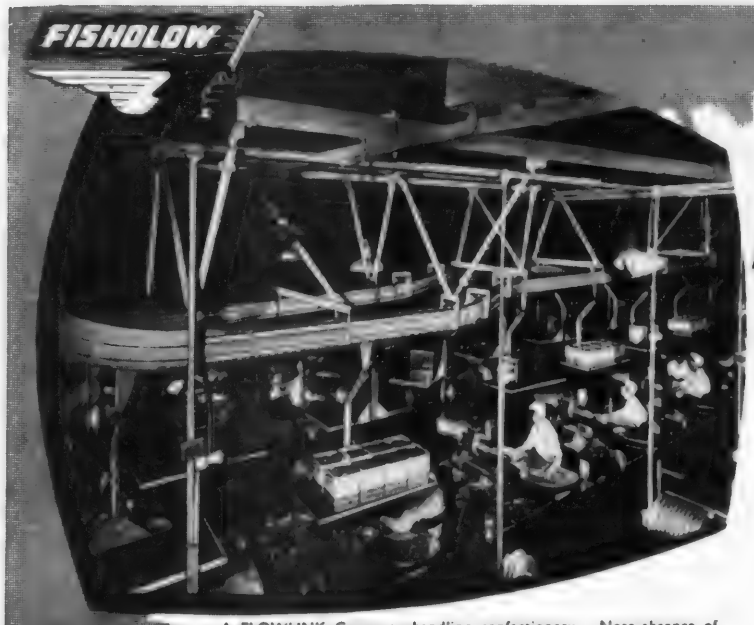

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A FLOWLINK Conveyor handling confectionery. Note absence of interference with floor space. *Photograph by courtesy of The Dulcet Confectionery Co. Ltd. London, N.W.10.*

★ **Please write for fuller details of the FLOWLINK Chain Conveyor System.**

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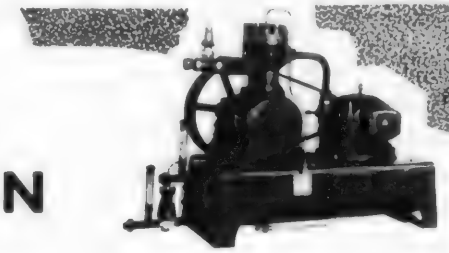

Weir Methyl Chloride or "Freon" condensing units, as illustrated at right, are supplied complete with compressor, driving motor and starter, and air or water cooled condenser. Compressors are of the vertical single-acting totally enclosed uniflow type operating on the dry compression system.

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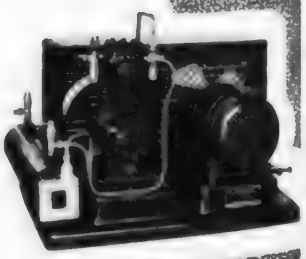

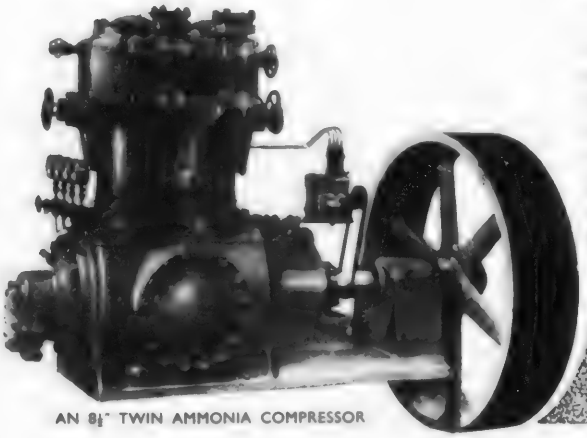

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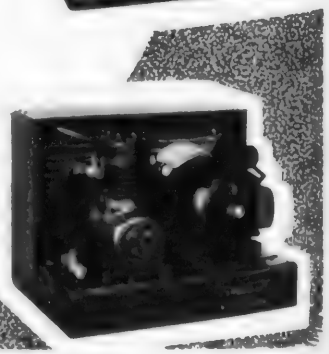

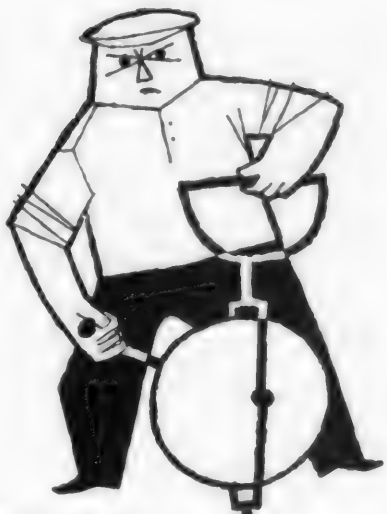

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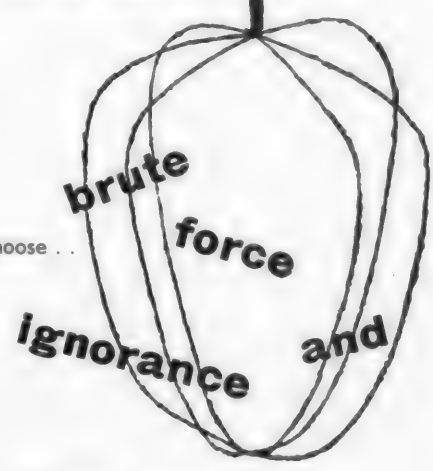

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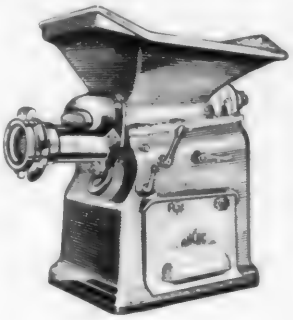

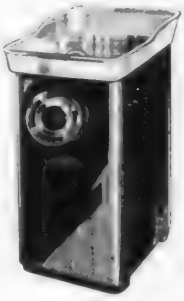

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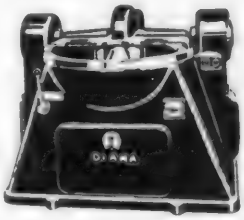

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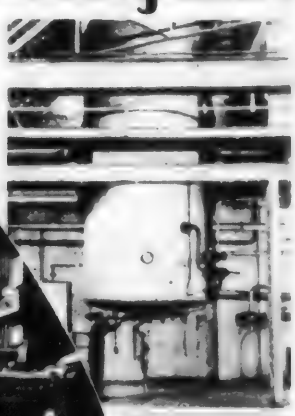

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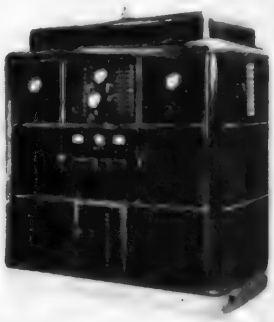

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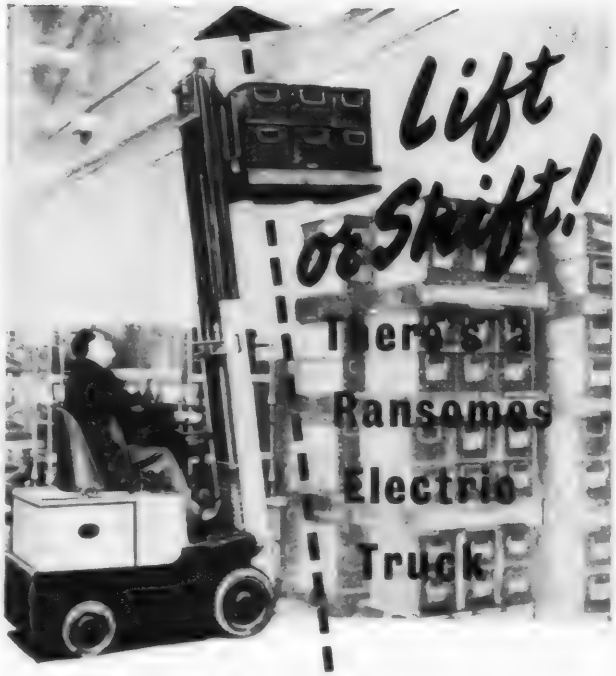

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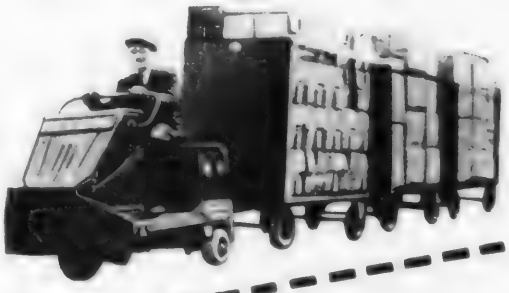

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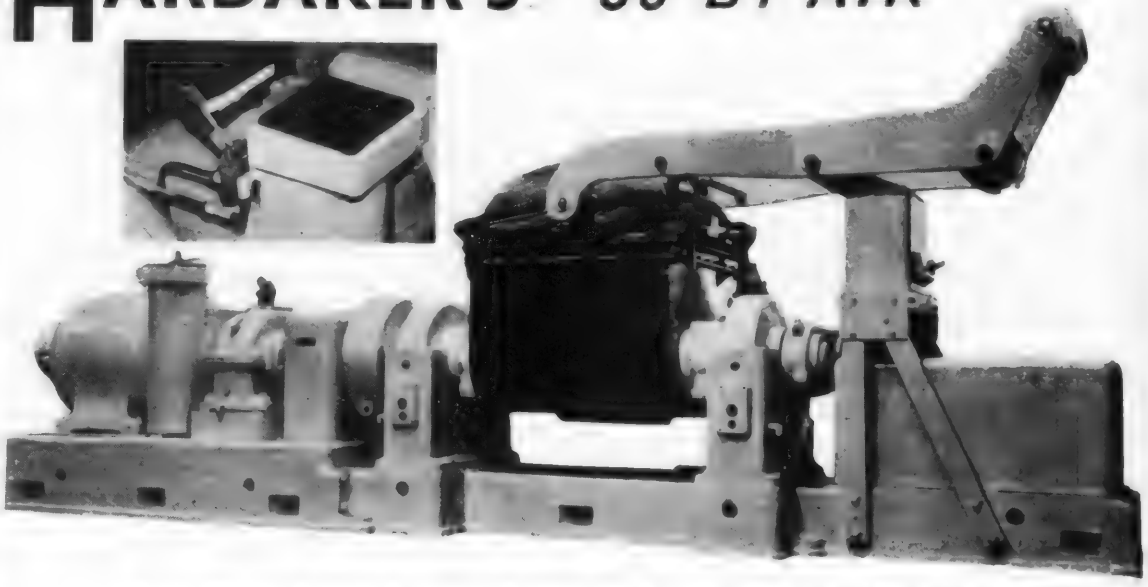

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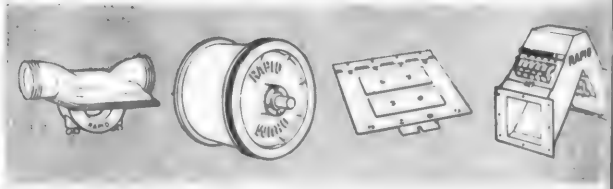

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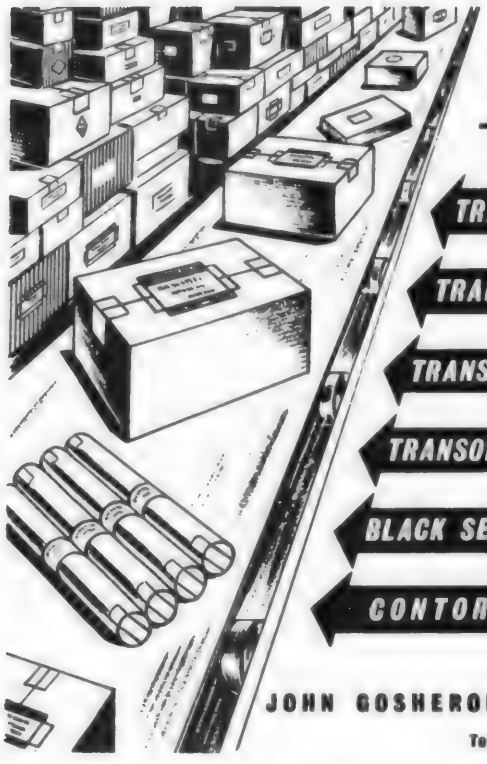

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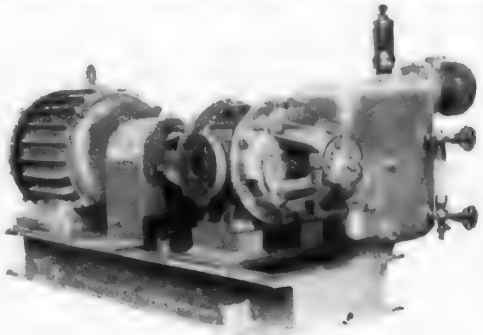

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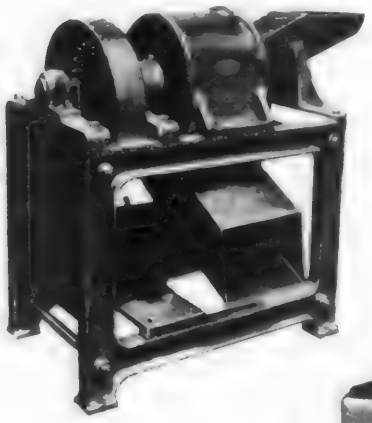

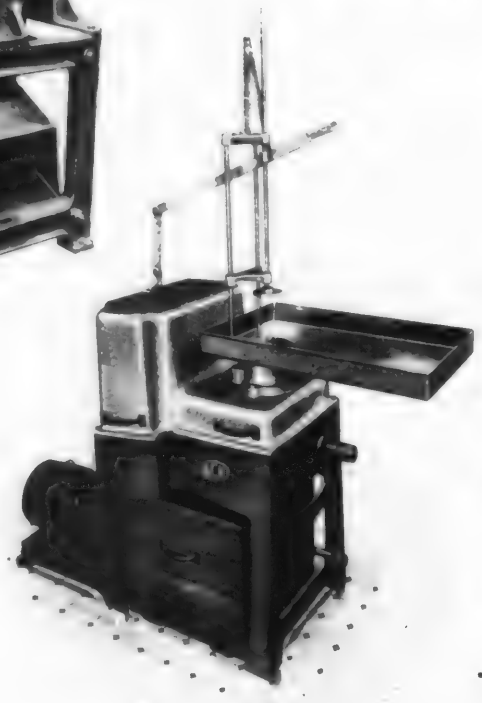

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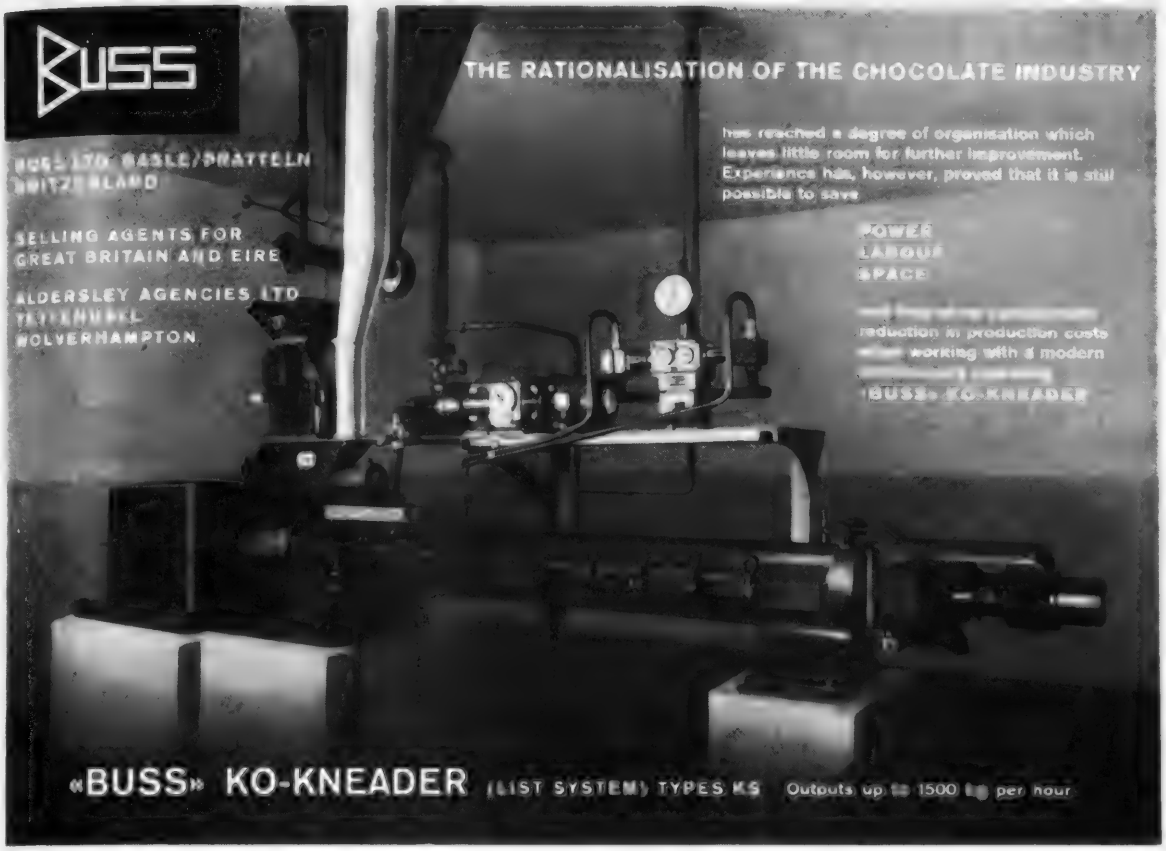
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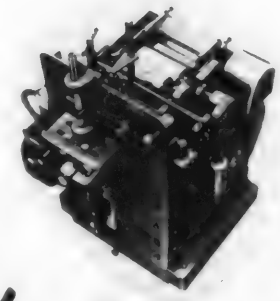

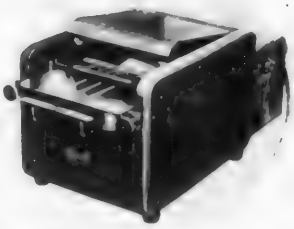

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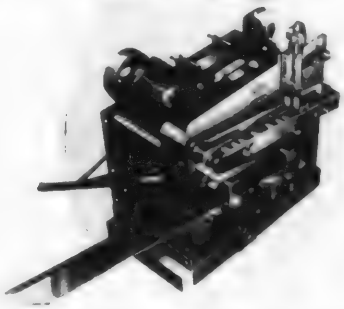

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First . . . It is 100% hygienic. **FABRIGUARD** will never contaminate food or liquids, either by smell or chemical action.

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Third . . . **FABRIGUARD** dries so quickly, two coats can be applied the same day. Complete week-end decoration is a practical proposition, *without dislocation of production.*

Fourth . . . Lightness, brightness and a clean appearance are exceptionally important in Food Factories. **FABRIGUARD** provides the means to achieve these conditions.

Fifth . . . **FABRIGUARD** is a fully proved Emulsion Paint. It has been rigorously tested over a period of years and used most successfully on *Flour Mills, Bakeries, Dairies,* by manufacturers of *Sweets, Biscuits, Jam, Ice Cream, Potato Crisps, Confectionery, Prepared Meats,* and by large Caterers.

Undoubtedly, **FABRIGUARD** could solve your special problems and meet your specialised requirements equally perfectly.

For Technical Bulletin and details of **FABRIGUARD** *Contracts, write to :—*
The Technical Director **HANGERS PAINTS LTD., HULL.**

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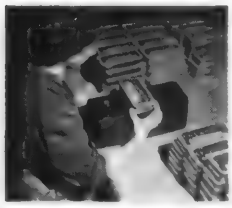
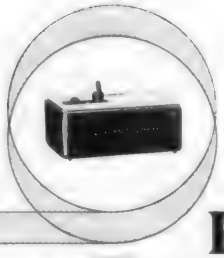


Get good

Wills's Cut Golden Bar Tobacco is rich and fragrant. Sealed in its tin with Permacel Cellulose Self-Sealing Tape it stays in perfect condition.

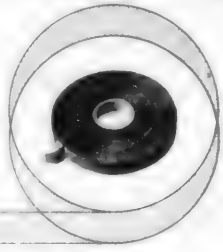
Despatch Departments in many companies using Permacel Cellulose Self-Sealing Tape in a Flicx Sealer have raised packaging output by as much as 75%.

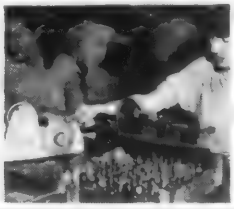


packaging

Oxo use miles of tough Permacel No. 43 Cloth Tape to seal, quickly and economically, thousands of tins of Oxo cubes. The tight, sure seal of Permacel No. 43 Cloth Tape keeps the Oxo cubes factory-fresh until they reach the user.

Permacel No. 43 Cloth Tape can be supplied in white, blue, green, old gold, fawn, red, black or grey, and in widths from ½" to 2".

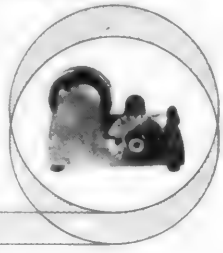




TAPED

Ferguson radio and television manufacturers, use 50 Permacel Pre-determined Length Dispensers with Cellulose Self-Sealing Tape to seal vast quantities of delicate and fragile equipment in their coil winding department.

The Permacel Pre-determined Length Dispenser takes cellulose tape up to 2" wide in rolls 72 yards long. This machine dispenses any pre-determined length from ½" to 20". It costs only £4.10.0.



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May we send you a catalogue or give you expert advice on any mixing problem.

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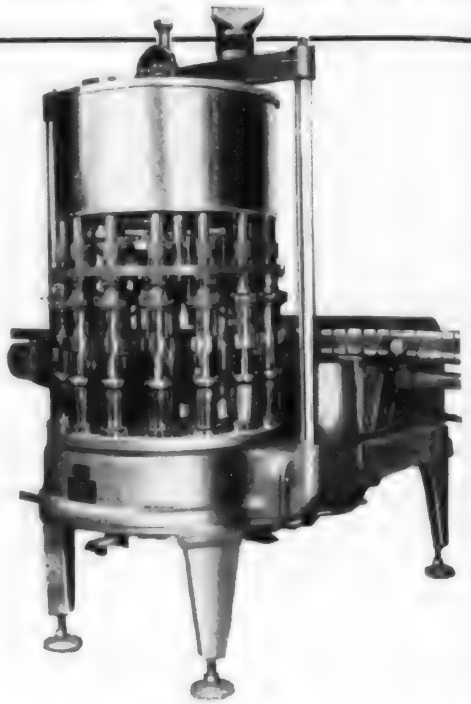
GEORGE PORTEUS AND SONS (LEEDS) LIMITED, Provender Milling Machinery LEEDS BRIDGE WORKS · LEEDS 10

GP 123

See ALBRO for Fillers & Cappers

A new 15-head fully-automatic filler for powders



This Albro 15-head fully-automatic, vacuum-operated rotary Powder Filler (the first of its kind) is capable of an output of 120 containers a minute.
It is *completely dust-proof*, and designed to eliminate small parts which may be lost or damaged. There are no moving parts in contact with the product.
There is an Albro machine to fill every need. Write for full details of the complete range of fillers and cappers.

ALBRO Filling Machines

for Liquids, Powders & Pastes

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All are produced in the U.K. to the highest standard of purity by

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Ask for a copy of our leaflet PC 0153 for further details and particulars of other types of useful portable containers.

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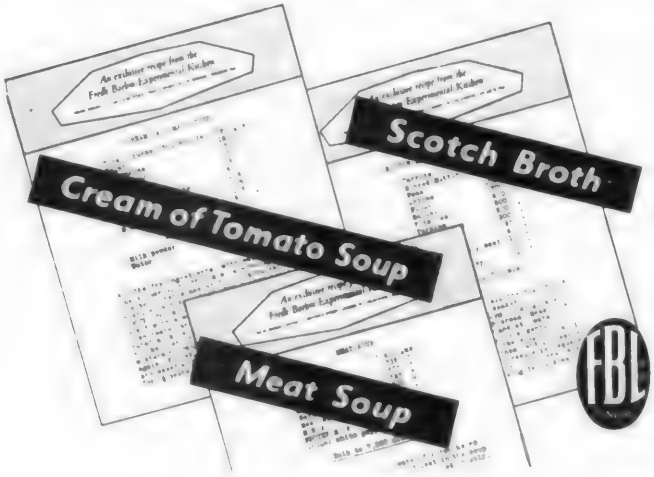

Examples and recipes of these appetising and good selling lines are available on request.
May we help you with your particular problem?

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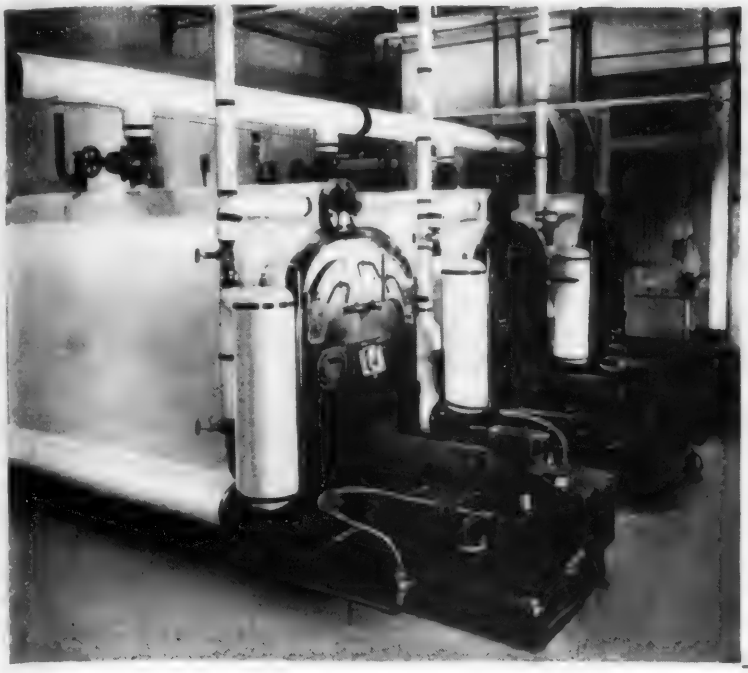

Three 8-section, all welded boilers, oil fired, fully automatic, with safety cut-out devices and thermostatic control, eliminating attendants. Giving maximum economy with minimum labour costs.

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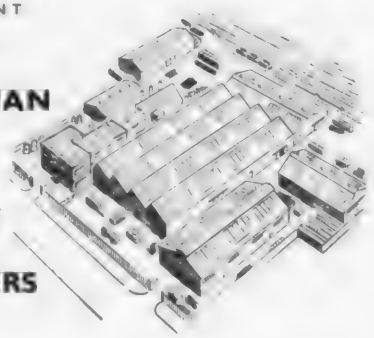

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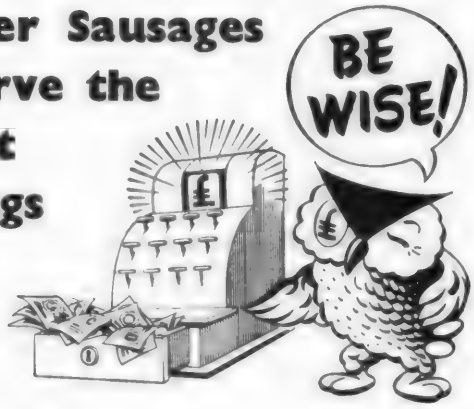

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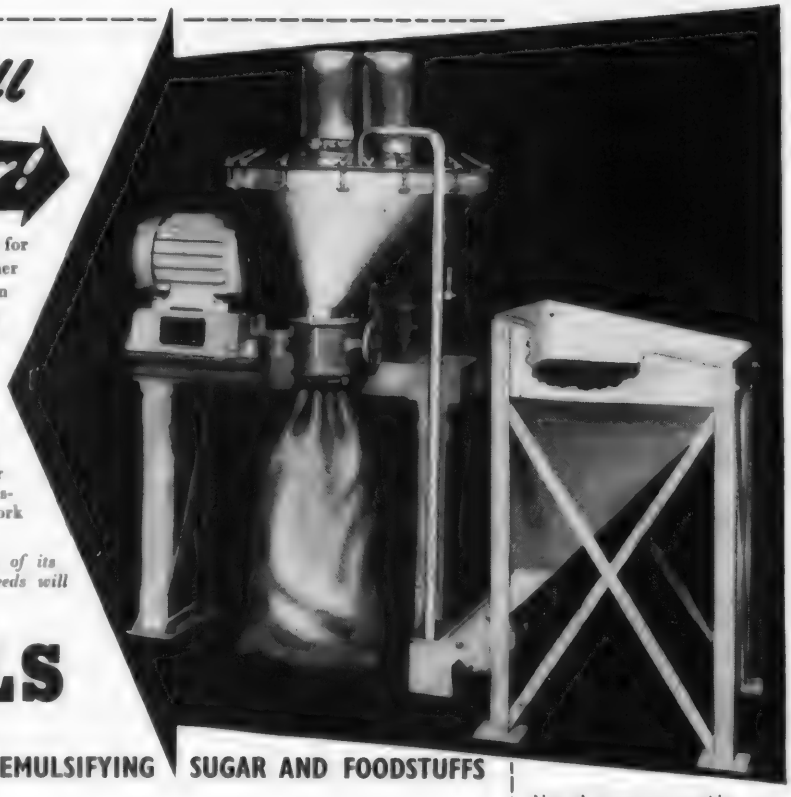
This fine grinding mill is of course equipped with the Kek suction feed—so especially suitable for sugar and other free-flowing materials—which dispenses with the motor, starter and structural work required by a shaker feeder.

Full particulars of the Kek Mill, with details of its icing sugar and pulverized sugar producing speeds will be sent on request.



Note the compact assembly with feed hopper standing conveniently at floor level.

KEK MILLS

Available in 3 sizes

FOR GRINDING, BLENDING AND EMULSIFYING SUGAR AND FOODSTUFFS

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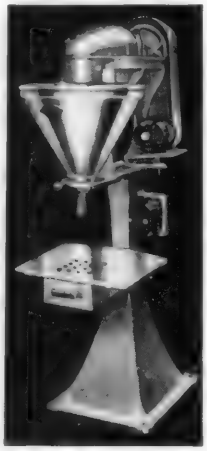

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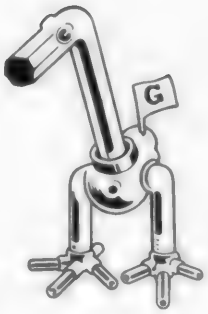

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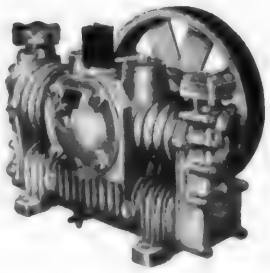

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LEAFLET G1/3 WILL HELP YOU

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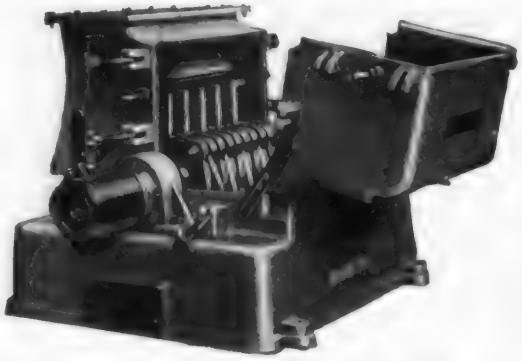

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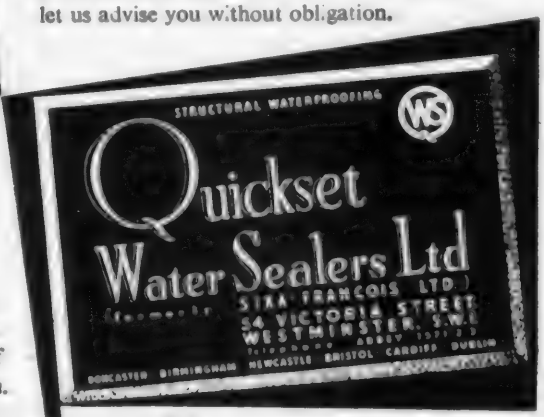

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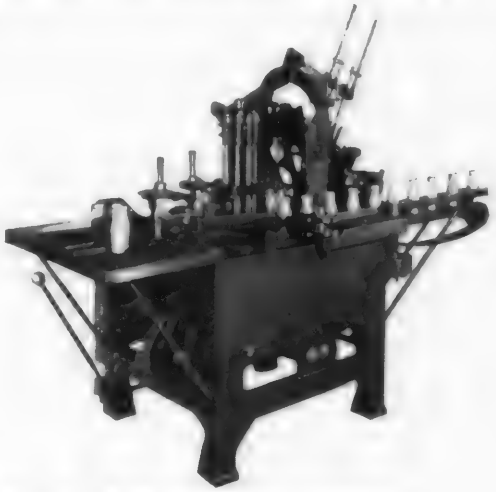

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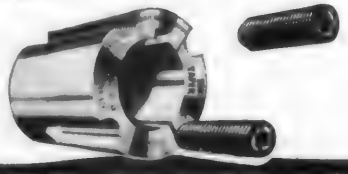

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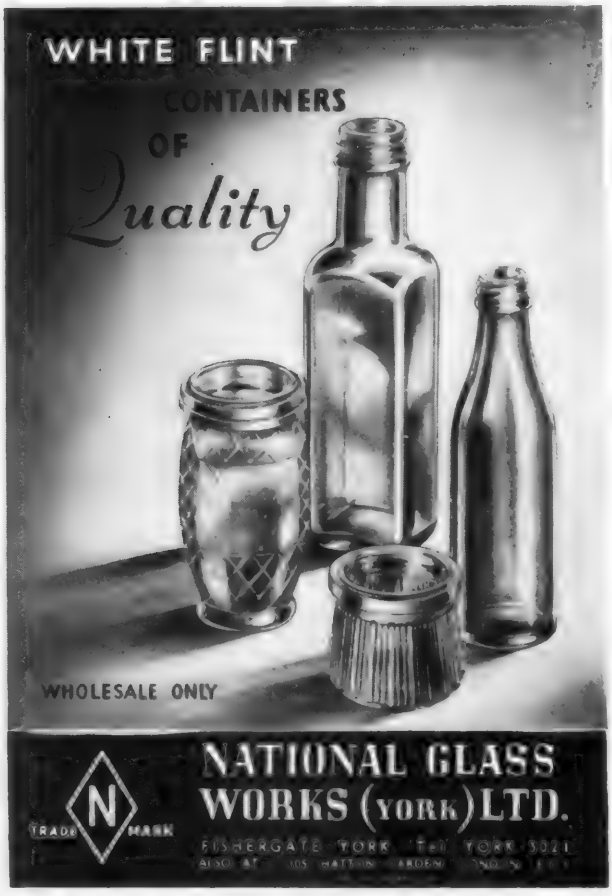

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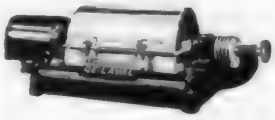

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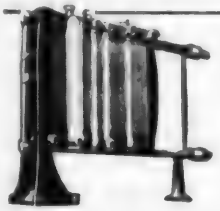

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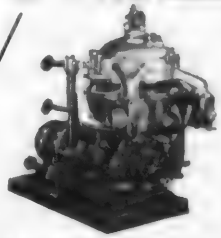

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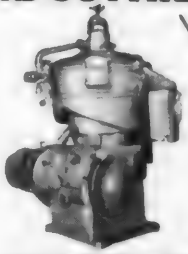

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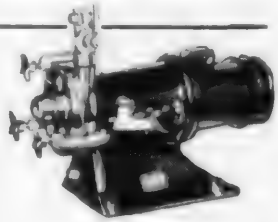

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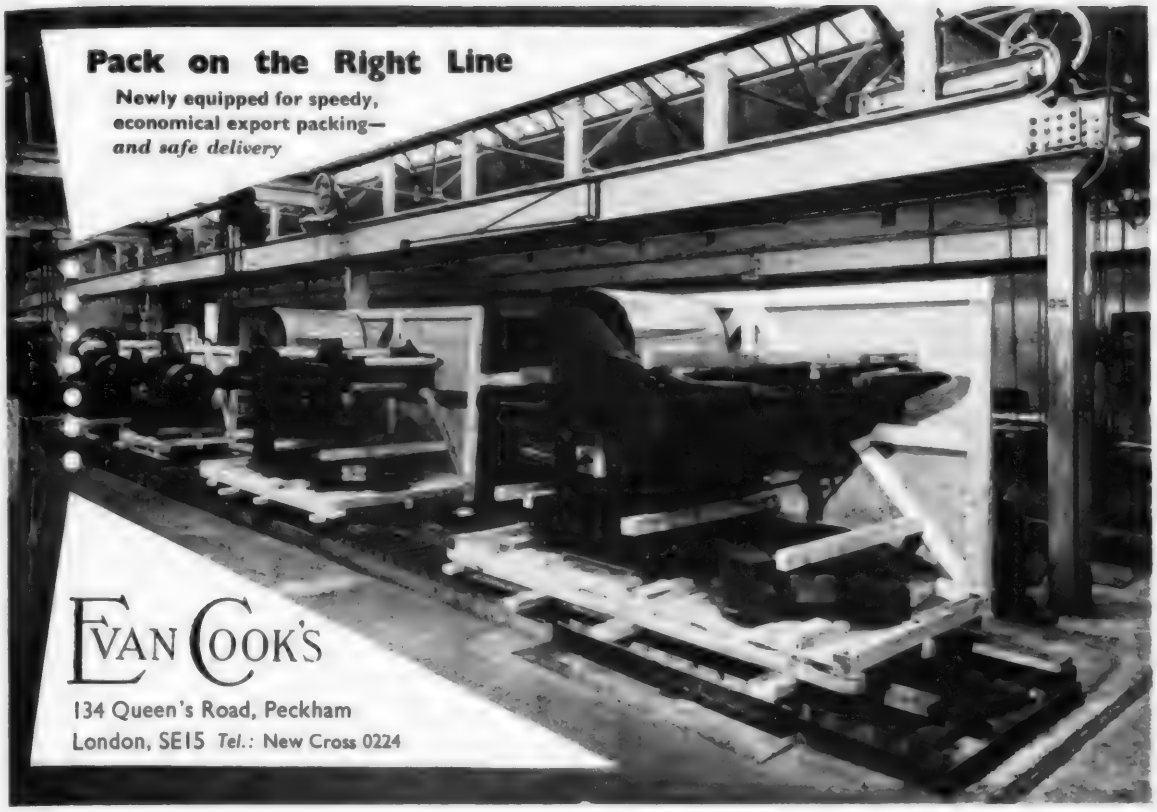
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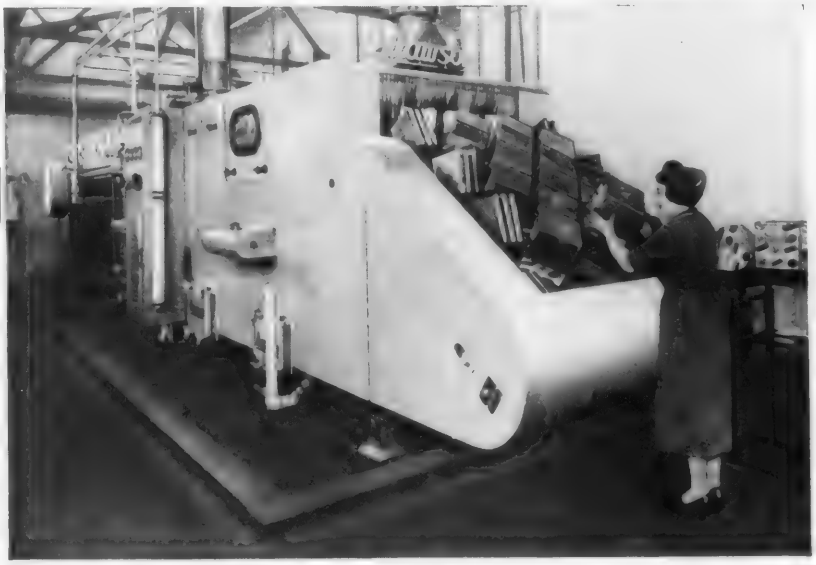

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COMBINED Sifting and Mixing Machines for powders, up to two tons capacity. 3-cwt. and 5-cwt. sizes in stock.—Makers: D. Burr and Son Ltd., Drayton Place, Croydon.

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WANTED: Second-hand plant. Automatic complete Ampouling Machine, single phase 220/250 volts A.C. 8-20 cu. ft. Gas or electrically heated autoclave; small electric or gas sterilizing oven. 80-100 quart Hobart or similar mixer.—Apply to Biorex Laboratories Limited, 47 Exmouth Street, E.C.1. 'Phone: TERminus 5216.

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COPPER Still (jacketed) 30/50 gall. capacity required. Minimum working pressure in jacket 30 lb. per square inch. Preferably with copper condenser and receiver.—Box B4558.

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PEA Viner required, age not important, but must be in reasonable order.—Full details and price to Box B4509.

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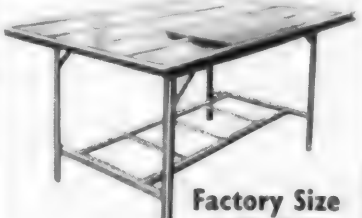
SURPLUS quantity of dehydrated Cabbage, Carrots, Potato and Swedes available for disposal.—Contact Carlton Foods, 35a, St. John Street, E.C.1. (Clerkenwell 7348.)

Stainless Steel Tables



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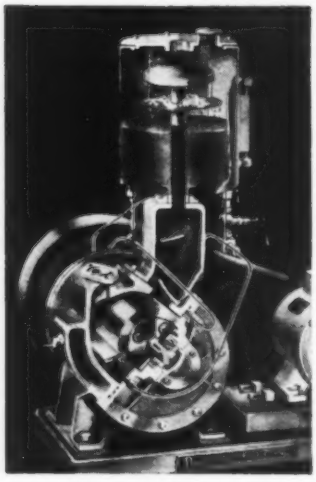

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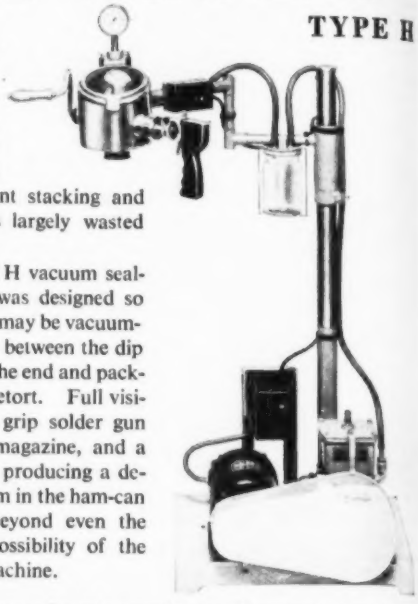
HAM CANNING

TYPE H



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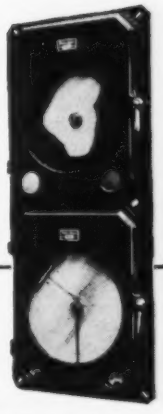
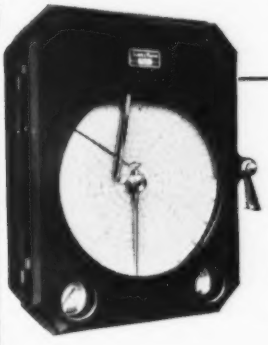
The S & M—Taylor Time Temperature Controller enables you to repeat any cooking schedule *automatically*. It gives you consistently high quality cooking.





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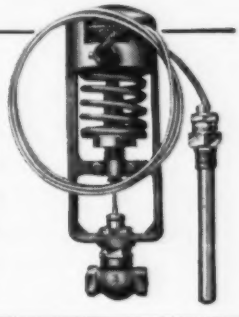

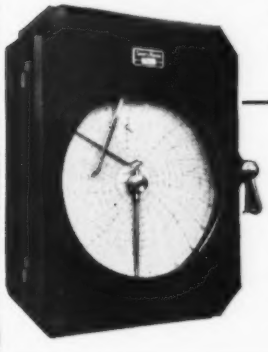

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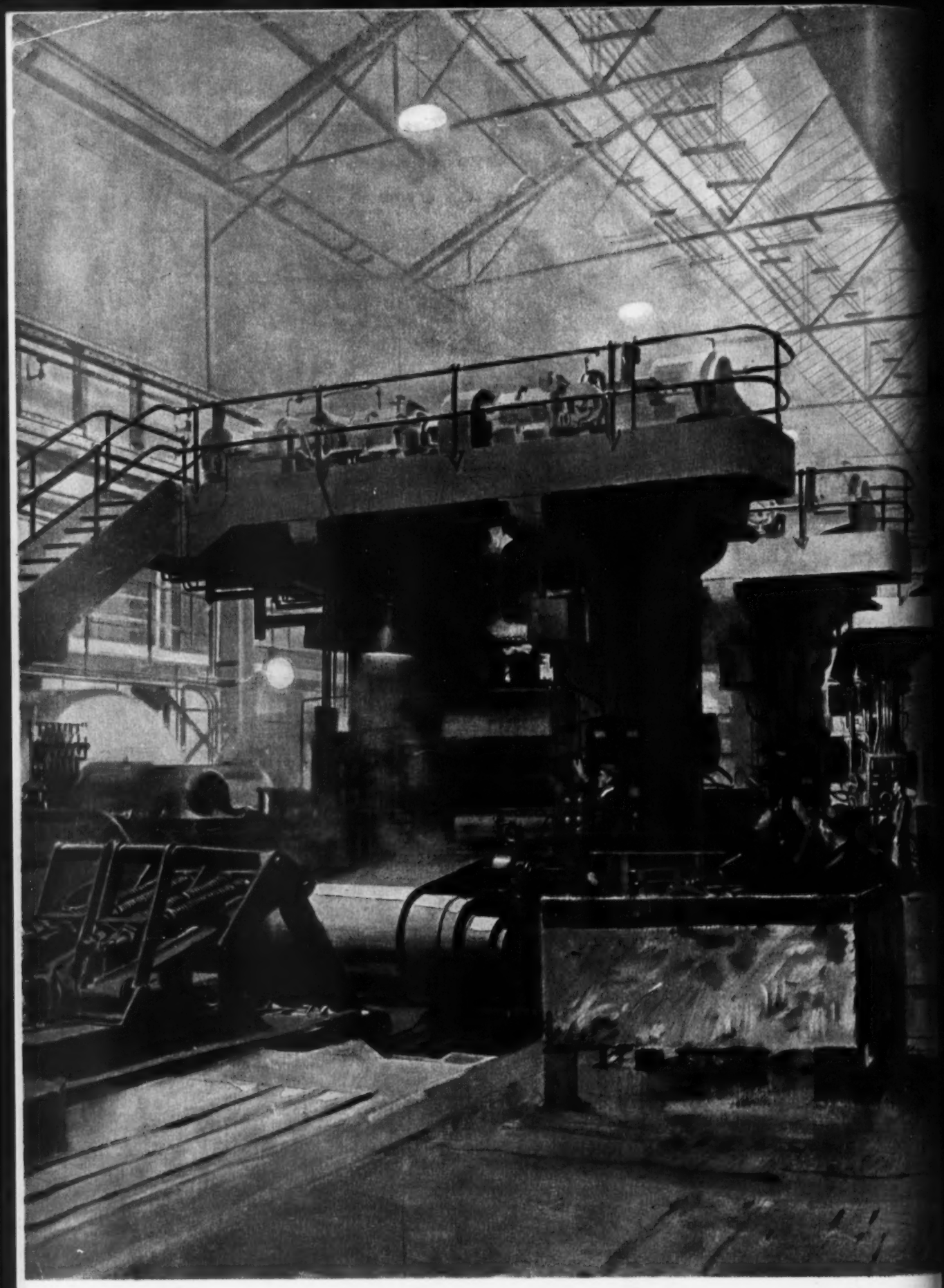

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